BEFORE THE ENVIRONMENT COURT

Decision No. A 078 /2008

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of appeals against the decision of the North Shore City Council on Proposed Plan Change 6 and Variation 66 to the North Shore District Plan under clause 14(1) of the First Schedule to the Act

BETWEEN LONG BAY-OKURA GREAT PARK SOCIETY INCORPORATED

(ENV-2006-AKL-894)

AUCKLAND REGIONAL COUNCIL

(ENV-2006-AKL-901)

LANDCO LIMITED

(ENV-2006-AKL-902)

S B & L A SINGLETON

(ENV-2006-AKL-903)

Appellants

AND NORTH SHORE CITY COUNCIL

Respondent

Hearing: Auckland on 16-20, 23-27, 30 and 31 July, 1-3 August and 9-11 and 15-19 October 2007
Site inspections on 8 October and 12 November 2007
Final submissions received 23 May 2008

THE SEAL OF THE ENVIRONMENT COURT NEW ZEALAND

Court: Environment Judge J R Jackson
Environment Commissioner M P Oliver
Environment Commissioner R M Dunlop

Appearances: Messrs A Galbraith QC, D Kirkpatrick and V Rive for Landco Limited
Mr M Williams for Long Bay-Okura Great Park Society Incorporated
Ms J Campbell for the Auckland Regional Council
Dr R Somerville QC, Mr P McNamara, and Ms N Tahana for North Shore City Council
Ms H Andrew, L Brookes, R Devine and L Crone for New Zealand Historic Places Trust (as a section 274 party)
Mr J Lewis for Okura Environmental Group (as a section 274 party)
Ms J Sherard for Ngati Whatua Ngä Rima O Kaipara (as a section 274 party)

Date of issue: 16 July 2008

INTERIM DECISION

A: Under section 290(2) of the Resource Management Act 1991 the Environment Court amends the decision by the North Shore City Council in relation to Plan Change 6 to its operative district plan by:

(1) allowing in part the Appeal ENV-2006-AKL-894 by Long Bay-Okura Great Park Society Incorporated but otherwise refusing the relief sought;
(2) allowing in part Appeal ENV-2006-AKL-901 by Auckland Regional Council but otherwise refusing the relief sought;
(3) allowing in part Appeal ENV-2006-AKL-902 by Landco Limited but otherwise refusing the relief sought.

B: Appeal ENV-2006-AKL-903 by S B and L A Singleton is adjourned for further submissions and evidence.

C: Under section 290(2) of the Resource Management Act the Environment Court amends the North Shore City Council's decision to which the appeals relate as stated in the reasons for this Decision;

D: Pursuant to section 293 of the RMA, the Court directs that the NSCC:

(1) consult with Landco and the other parties and submit to the Court:

(a) a draft structure plan Land Use Strategy map giving effect to the findings and judgcments in this Interim Decision by 30 November 2008;

(b) a final version of the Land Use Strategy (17B.1.3) and the Land Use Strategy map by 31 March 2009;

(2) if agreement between the parties cannot be reached on the Land Use Strategy and final Land Use Strategy map, then leave is reserved to the parties to refer any outstanding issues - including any issue about the functionality of the Strategy and implementing map - to the Court, so long as the issue does not attempt to breach the spirit and intent of this Interim Decision;

(3) after completion of step (1) and, if necessary step (2), the NSCC is to further consult with Landco and the other parties about amending the balance of Plan Change 6 in accordance with:

(a) the spirit and intent of this Interim Decision;

(b) the Land Use Strategy and Land Use Strategy map resolved under (1) and (2) above;

(c) Part 5 of this decision;

(4) if agreement cannot be reached under (3) leave is reserved to apply to the Court for a hearing in respect of those matters.

E: Leave is reserved:

(1) to any party to apply for a conference in respect of outstanding issues with respect to the Upper Valley,

(2) to any party to apply for further or other directions in case:

(a) the Court has overlooked anything; or

(b) a timetable needs to be changed.

F: Costs are reserved.

REASONS FOR DECISION

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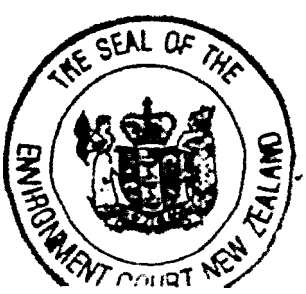
0.0 Introduction

0.1 The issue: urban development behind Long Bay

[1] The ultimate issues in these proceedings are how much urban development is sustainable behind Long Bay and Grannie's Bay within the North Shore City, and what form should that development take?

[2] Long Bay and the two smaller bays - Grannie's Bay and Pohutukawa Bay - north of it are at the northern end of North Shore City - which ends immediately beyond Pohutukawa Bay at Piripiri Point. The popular Long Bay Regional Park - on a



peak summer day it attracts up to 15,000 people[1] - starts beyond the urban area of Torbay which is the current limit of residential development along the coast of North Shore City.

[3] These proceedings are about the management of subdivision and land uses in an area of 360 hectares comprising the Long Bay Structure Plan Area ("LBSPA") immediately north of Torbay and inland from the Long Bay Regional Park. The structure plan area includes:

(1) almost all of the catchment of Vaughans Stream - a large stream which flows into a wetland behind the parkland flats of Long Bay;

(2) a small part of the catchment of the Awaruku Stream where it runs northeast from the built-up hinterland of Torbay; and

(3) very small areas of the head of two watersheds draining into Grannie's Bay and, further north, Pohutukawa Bay respectively.

[4] To assist understanding of the topography and groundcover of the LBSPA we attach marked "A" (a copy of a map prepared by Dr D A Kettle[2]). The legend on that map identifies various features, including numbering of the tributaries to the main stream (Vaughans Stream) running through the LBSPA, and its catchment boundaries. The map also shows that the last few hundred metres of Awaruku Stream before it joins the sea, and its four tributaries from the north are all in the southeastern corner of the LBSPA.

[5] Using that information we have identified the following areas so that we can refer to them separately:

- "Awaruku Ridge" is the area east of Long Bay College which:
  (i) is contained within parallel lines about 100 metres apart and either side of the catchment line between Awaruku Stream and Vaughans Stream but

[1] Mr N Olsen, evidence-in-chief para 5.6 [Environment Court document 57].
[2] Dr D A Kettle, evidence-in-chief ex DK07 [Environment Court document 12].

(ii) excludes the steep scarp or toe at its seaward end;

- "Awaruku Headland" is the toe of Awaruku Ridge facing the sea;
- "Awaruku Slopes" is the area south of Awaruku Ridge but within the LBSP area and includes the bed of the Awaruku Stream;
- "Vaughans Slopes South" is the area south of Vaughans Stream rising to the Awaruku Ridge and east of Stream 3;
- "Vaughans Flats" is the area of Vaughans Stream that floods in the 100 year ARI flood and includes part of the Vaughans Stream's estuary upstream of the Regional Park boundary;
- "Homestead Spur" is the north-south running spur to the east of Stream 0;
- "Grannie's Ridge" is at the head of Homestead Spur and streams 0 and 1A and divides the Grannie's Bay catchment from those tributaries of Vaughans stream;
- "Piripiri Point Ridge" runs north along the main ridge between the Okura and Grannie's Bay Catchments;
- "Vaughans Slopes (North)" is the area east of stream 6 between Vaughans Stream and Vaughans Road;
- "Vaughans Road Ridge" is the ridge starting at the intersection of that road and Okura River Road and running east to the end of the present formed Vaughans Road (which is the point where Piripiri Ridge branches to the north, and Grannie's Ridge rises slight to the east and then falls to the sea).
- the "Glenvar Slopes" is the area south of Vaughans Stream and within the catchment of Streams 3 and 9 and its tributaries 9A, 9B and 9C;
- the "Upper Valley" is all remaining land within the LBSPA.

0.2 The history of NSCC's Proposed Long Bay Structure Plan

[6] A proposed district plan under the Resource Management Act 1991 ("the Act") or "the RMA") was publicly notified by the North Shore City Council ("NSCC") and on 28 June 2002 it became partly operative. Because the "Residential Expansion" zoning and map of the LBSPA had not become operative the Council notified the new LBSPA provisions as a hybrid Proposed Variation 66/Plan Change 6 on 20 May 2004. Variation 66 and Plan Change 6 proposed to add two new sections (Chapters) 9A and 17B - including a strategy and various consequential objectives, policies and methods, and 4

maps, for the management of the LBSPA under the partially operative district plan. As the Residential Expansion zoning became operative on 28 June 2007 the instrument before this Court was a plan change only (Plan Change 6).

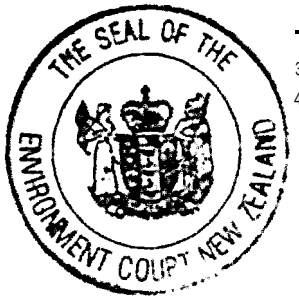
[7] Variation 66 and Plan Change 6 generated a very large number of submissions. After a hearing of those submissions the City Council notified its decisions version ("the Council's structure plan" or "NSCC SP") of the LBSP on 11 May 2006. A copy of the NSCC's now[3] proposed structure plan map is shown on annexure "B" to this decision.

[8] Two landowners within the LBSP area - Landco Limited, and Mr and Mrs Singleton - appealed to this Court. The Singleton appeal has been resolved by consent, although any agreement is of course subject to the decisions in these proceedings.

[9] Landco, which owns about 178 hectares in the Structure Plan area, has put forward its own Long Bay Structure Plan ("the Landco Plan" or "LSP") for consideration by the Court. A copy of Landco's proposed structure plan map is also shown on the annexed plan marked "B". Comparative versions of the proposed strategies and consequential objectives, policies and methods of the NSCC SP and LSP as at July 2007 were given to us in a yellow booklet[4]. All our references will be to those versions of the two structure plans.

[10] Two other appellants, the Long Bay-Okura Great Park Society Incorporated ("the Long Bay Society") and the Auckland Regional Council ("the ARC"), do not oppose a structure plan for Long Bay but are concerned both with aspects of the NSCSP as approved by the NSCC decision, and even more with the Landco SP.

[11] Three section 274 parties - the New Zealand Historic Places Trust, the Okura Environmental Group ("the OEG") and Ngati Whatua Nga Rima o Kaipara - appeared at the hearing.



3 NSCC SP (July 2007 version) as shown on exhibit DM16.
4 Environment Court document 1A.

[12] Before and during the hearing we read the evidence of 70 witnesses - most of whom had at least two statements of evidence. Over the 23 days of the hearing we heard cross-examination of over 60 experts and oral submissions which together resulted in a further 2,025 pages of transcript. We also heard many more pages of (substantive) written submissions. We have re-read most of the evidence and transcript (parts of it several times) since the hearing. We have carried out two site inspections.

0.3 Instruments managing the Auckland Region's resources for growth

0.31 The Metropolitan Urban Limit

[13] The question of whether there should be urban development of the Long Bay area and if so, how much, has arisen because the LBSP area is within the Metropolitan Urban Limits of Auckland. Outside that line urban development is effectively prohibited. Inside it urban development can be contemplated.

[14] The LBSP area was included within the Metropolitan Urban Limit by the decision of the Environment Court in 1996: *North Shore City Council and Others v Auckland Regional Council*[5]. In our view that decision is more subtle and circumscribed than is generally realised. The fundamental issue for the Court in 1996 was whether various environmental constraints made it inevitable that the land should not be used at all for the purpose of urban development. The Court held that the land was not necessarily required to be used for non-urban activities to achieve sustainable management. The core of its decision, in our view, was the finding that[6]:

> ... we have not accepted that there would necessarily be significant adverse effects of urbanisation on the environment of the Long Bay coast, or on the marine life of the marine reserves. We have found that ... the landscape quality and the likely effects on the environment of urbanisation of the part of the land within the coastal catchment are not such as to indicate that it should not be urbanised.

The Environment Court in 1996 was not deciding that all, much or even any of the Long Bay land should be developed for urban purposes, but that such development should not necessarily be precluded by placing the land outside the Metropolitan Urban Limit.

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5 Decision A86/1996; [1997] NZRMA 59.

6 Decision A86/1996; [1997] NZRMA 59 at 92.

0.32 Variation 66 and Plan Change 6

[15] The idea of Variation 66 and Plan Change 6 as notified in May 2004 was to provide for about 4,000 people in 2,500 households. They were to be accommodated in houses and apartments on urban or suburban or larger lots around a village centre and 'green' close to the sea. Building on the input from all the other experts the resource managers/planners generally agreed on the following zoning framework[7]:

ZONE	ACTIVITY
Long Bay 1 zones	Large-lot.
Long Bay 2 zones	Suburban.
Long Bay 3 zone	More intensive housing (detached, terraced and apartment housing).
Long Bay 4 zone	Apartment development with non-residential activities at ground level possible.
Long Bay 5 zone	Mixed use village centre.
Long Bay 6 zone	Stormwater management
Long Bay 7 zone	Historic Heritage

[16] The NSCC SP proposes seven new land use zones as shown on Attachment B to this decision. Their purpose and proposed distribution are summarised as follows:

> Long Bay 1A and 1B Zones: are large lot residential zones with a minimum site size of two hectares reducible to 2,500m^2 and 5,000m^2 respectively subject to the adoption of environmental protection measures (bush protection, removal of stock, weed and pest control, and avoidance of landform modification). The zones are generally applied to areas with land instability and slope constraints[8]. The LB 1A zone is proposed predominantly in the upper Valley fronting a section of Vaughans Road and in the upper Valley in the vicinity of Glenvar Road. The 1B Zone occupies a larger area in the upper, mid and lower Vaughans Slopes extending in places to the flats. It is also proposed on parts of the Glenvar and Awaruku Slopes.

7 Agreed statement 12 "Planning" Table 1 [Environment Court document 6/12].

8 Except for the LB 1B zone on the Vaughans Flats.

Long Bay 2A and 2B Zones: are suburban residential zones where development is expected to comprise 1 - 2 storey stand alone houses with 35% maximum site coverage. LB 2A has a minimum lot size of 600m^2 in Stream Protection Area A and a 500m^2 minimum/600m^2 average in Stream Protection Area B[9]. The Long Bay 2B Zone has a minimum lot size of 1,000m^2. The Long Bay 2A Zone is applied to the Awaruku Ridge and Glenvar Slopes. The Long Bay 2B Zone occupies a smaller area in Stream Protection Area B on the Awaruku Ridge and its south facing slopes.

Long Bay 3 Zone: provides for terraced housing and some stand-alone dwellings on small lots with an average density of one unit per 250 - 350m^2, or average lot sizes between 240 - 280m^2. Development is allowed for on either an individual lot basis or comprehensively on sites of l,500m^2 plus. The zone is applied to a section of the lower Vaughans Slopes in the lower Valley across the stream from the proposed Village Centre and in a crescent around the Centre.

Long Bay 4 Zone: provides for higher density apartments, up to 4 storeys and at an average density of one unit per 150m^2. Unobtrusive non-residential activities are allowed for at ground level, such as workplaces. The zone is applied to the lower Vaughans Slopes opposite the Village Centre [adjoining the LB 3 Zone] and adjacent to the Centre.

Long Bay 5 Zone: provides for a Village Centre to meet the day-to-day needs of residents. Development is to "address" the street and adjacent reserve areas with a range of activities allowed for, including apartments and compatible mixed uses. The Zone is applied to an area in the lower Vaughans Valley on the southern side of the stream.

Long Bay 6 Zone: provides for stormwater management having regard to water quality, ecological and open space values. It applies to the floodplains of the Vaughans and Awaruku Streams, in their lower catchments.

[9] 'Stream Protection Areas' are explained in the next paragraph.

Long Bay 7 Zone: has the purpose of protecting the "historic heritage landscape" at the eastern end of the Awaruku Ridge overlooking the Long Bay Regional Park. No minimum site area is specified. Development is to proceed in accordance with a comprehensive development plan, which is to incorporate an historic heritage management plan for the Zone's [heritage] resources. Within this zone any building is a discretionary activity with the discretion focussed on mitigating damage to the historic heritage.

[17] Other provisions central to a preliminary understanding of the NSCC SP's provisions are:

(1) Landscape Protection Areas [LPA]. Three categories of LPA "overlay" vegetated areas/areas suitable for re-vegetation, steep gullies and waterways identified as worthy of protection for landscape, ecological, stormwater and land stability purposes[10]. Upon subdivision, identified areas are required to be protected permanently and generally to remain free of development. Three LPA sub-categories are proposed each having additional, specific requirements:

- The LP (Conservation) Area includes land "generally covered in existing vegetation and/or which has been identified as an area in which no development may occur". The sub-category covers land on the lower slopes of the Vaughans Stream in its upper and middle reaches, related gullies and the eastern end of the Awaruku Ridge.
- The LP (Ecological/Stormwater) Area includes land identified as suitable for planting "to contribute to extending areas of native bush in the SP area and to assist in the on-site mitigation of stormwater" runoff. Such areas are to generally be kept free of development. Planting is also to "reduce the dominance of buildings on the landscape". The sub-category covers land on the margins of the Vaughans Stream, its tributaries, the Glenvar Slopes and lower Awaruku Stream.

[10] NSCC SP Explanation and Reasons 9A.4.5.4.

- The LP (Enhancement) Area includes relatively steep land not generally suitable for development. Its purpose is to provide a landscaped backdrop to development in the adjacent LB 3 and 4 zones on the north side of the Vaughans Stream and to assist land stability.

(2) Stormwater and sediment control. The structure plan takes an integrated low impact design approach to stormwater mitigation with the emphasis, in the first instance, on the reduction of volumes generated from sites by reuse and increased previous areas, including the decompaction of soils following earthworks[11]. More particularly, provision is made for a "full stormwater treatment train" comprising primary features (for example, on-site impervious surface controls, rain tanks, rain gardens and swales) and catchment-wide facilities, such as treatment ponds/wetlands, which are only to be used as final forms of treatment[12]. The policies for the stream protection areas are implemented by rules[13] for on-site stormwater management, that control impervious surfaces and prescribe mitigation measures (rain tanks, design and other measures).

(3) Stream Protection Areas A and B. The NSCC structure plan divides the LBSPA into two areas 'A' and 'B' as shown on attachment "B". The concept is to have different levels of residential development and different standards of, and methods for, managing sediment and stormwater in the two areas. In Stream Protection area 'A' which is the upper part of the LBSPA new policies[14] propose *(inter alia)* "to incorporate on-site stormwater mitigation techniques that manage stormwater quality and quantity and limit the quantity of stormwater run-off to predevelopment levels ....". Development in Area A is to retain streams and watercourses in their natural state, and to provide riparian protection by various means including building setbacks and replanting requirements[15]. "In the lower

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11 NSCC SP 9.4.3.2.5.
12 NSCC SP 9A.3.2.5 and 17B.6.1.10.
13 17B.6.1.10.
14 Policies 9A.3.2(5) to (15).
15 Policy 9A.3.2.11.

part" of the structure plan area - which we interpret as Stream Protection Area B - a high standard of mitigation of run-off is to be achieved to avoid adverse effects on water quality, ecological values and aesthetic values through a mix of on-site and off-site measures[16]. In Area B modification of ephemeral tributaries is anticipated[17].

(4) Proposed and Preferred Roads. "Development should provide for" the proposed roads shown on the NSCC SP[18] viz:

- an extension of Beach Road over Awaruku Ridge across the Vaughans Stream, and up to Vaughans Road;
- a linkage from Ashley Avenue to the extended Beach Road; and
- the creation of a new link from Glenvar Road past the proposed Village Centre to a new Regional Park entrance;
- preferred local road alignments are also shown, but council is open to alternative alignments provided their primary purpose of achieving a "high degree of permeability" is achieved;
- also shown on the NSCC SP's roading map is a mix of on- and off-road footpaths and cycle-ways.

(5) Reserves. The structure plan shows reserves, being a mix of existing (Ashley Avenue, Coventry Way, the Regional Park and Piripiri Point) and proposed facilities. The latter principally comprise "a main open space spine through the middle of the SPA, mostly following Vaughans Stream, Linking the Regional Park ..." with the upper catchment. This feature is to be designed to integrate with the stormwater treatment measures in the LB 6 Zone in the lower Vaughans catchment. A "village green" (presumably

16 Policy 9A.3.2.7.
17 Policy 9A.3.2.11.
18 Policy 9A.3.5.11.

within the spine) is to be created in the vicinity of the Village Centre. All dwellings are to be within 500m of local neighbourhood reserves[19].

0.33 The Landco Structure Plan

[18] The Landco SP also utilises seven zones, which generally align with those in the NSCC SP, although their disposition differs markedly in places. In summary, noting salient differences, Landco SP proposes:

Long Bay 1A and 1B Zones: that allow for similar large lot residential development. The 1A zone has a minimum lot size of 2,500 m^2 with legal protection and re-vegetation required in areas subject to a Landscape Protection Area overlay. There is no averaging provision in the 1A zone. The 1B zone has both a 2,500 m^2 minimum site area and an averaging provision, which allows "1 site per 5,000 m^2 not shown as Landscape Protection (Conservation) Area" with an additional requirement for legal protection and re-vegetation where an overlay applies. The Landco SP differs from the NSCC plan in that the 1A and 1B zones are applied to a markedly smaller area located in the upper Vaughans catchment and on the north side of the Stream mid-catchment.

Long Bay 2A and 2B Zones: are similar suburban neighbourhood residential zones to the NSCC's but with provision for various sub-zones [2A(i) and (ii) and 2B(i) - (iii)] and different minima and averaging provisions. Their location differs markedly from the NSCC SP in that the North Vaughans Slopes, more of the Glenvar Slopes, Awaruku headland and south Awaruku Slopes are included in the Zones.

Long Bay 3 Zone: is also an urban neighbourhood zone. It allows for similar development to its council counterpart and generally in similar locations. Primary differences are that:

[19] We do not see neighbourhood reserves on the NSCC SP: Land Use Strategy map [Drawing 13-R] despite the Explanation and Reasons statement at p19 of the Comparative Text that "they are located so as to offer viewpoints" in various named directions.

- On the south side of the Vaughans Stream, the zone extends further to the south of the proposed Village Centre; and
- On the north side of the Stream a larger area is zoned supplanting council's LB 4 (Urban Village) zone.

Long Bay 4 Zone: is an urban village zone intended primarily for comprehensively developed apartment buildings of 3 - 4 storeys with a minimum pre-construction lot size of 1,500m^2. It applies to a relatively large area on three sides of the proposed Village Centre.

Long Bay 5 Zone: is essentially the same as the Council's Village Centre zone except that it occupies a larger area - 2.43 hectares (excluding roads) versus the Council's 0.87 hectares[20].

Long Bay 6 Zone: differs from council's LB 6 Zone in that it is both a Recreation and Stormwater Management Zone. It also applies to a larger area and more diverse locations, namely the lower - mid Vaughans flats, the lower Awaruku catchment, two gullies on the north Vaughans Slopes, an area on the Awaruku Ridge and parts of the Glenvar Slopes. The Landco SP explains that the Zone "applies to key open space and overland flow paths in the SPA. Accordingly [it] is intended to provide for recreation open space opportunities and those works associated with stormwater control and treatment ... Subdivision within this zone is limited to the creation of reserves for recreation purposes, drainage reserves ... and roads". Land vested as local purpose recreation reserve would contribute towards any financial contribution payable for open space purposes but land vested for drainage reserve purposes would not.

Long Bay 7 Zone: differs from the council's LB 7 Zone in that it is both a Recreation and Heritage Protection Zone. The zoning is applied to a markedly smaller area than council's LB 7, being limited to the very eastern end of the Awaruku headland and a portion of the Ridge's northern slopes. The area zoned is viewed by Landco as having considerable public value on account of its

[20] Mr B J Smith, evidence-in-chief Annexure 7 [Environment Court document 79].

heritage resources and proximity to the Regional Park. Accordingly "the zone provides both recreational and heritage protection functions". Opportunities for subdivision are limited, and the area is to be retained as public open space with a single community facility. Other features of the zone are objectives, policies and rules for Zone 7 which:

- are 'focused' on the protection and preservation of archaeological and cultural heritage;
- provide for a limited range of passive recreation activities;
- make the establishment of a 'community facility' which promotes heritage values a limited discretionary activity;
- make residential development and other activities non-complying[21].

[19] Other provisions central to a preliminary understanding of the Landco SP provisions are:

(1) Landscape Protection Areas: in a similar manner to the council Landco proposes three LPA categories:

- LP (Conservation);
- LP (Enhancement); and
- Potential Landscape Enhancement Area.

The various areas are delineated on the Landco SP Map: Designations and Special Provisions. In very broad terms the Landco LPAs coincide with those of the council. Where the structure plans depart is that Landco proposes to define "significant" ecological values requiring protection and enhancement as those features and characteristics listed in its Schedule 9A-1 (which coincides with the Landscape Protection (Conservation) Area overlay) and in its Schedule 9A-2 (which coincides with the Landscape Protection (Enhancement) overlay). The Landco Potential Landscape Enhancement Area applies to two relatively small areas west of the LB primary school.

[21] Mr B J Smith, evidence-in-chief pp 50-51 [Environment Court document 79].

(2) Sediment management: While sediment control and stormwater management are primarily issues for the ARC, to co-ordinate land use and water management issues Landco's evidence contained some useful information on sedimentation issues during earthworking. There are relevant standards in the ARC publication TP 90 which Landco proposes to comply with. We read evidence by Dr M F Larcombe for Landco that in relation to:

- for contributing catchments of < than 0.1 ha Landco would 'typically' use catch pits or silt fences[22];
- 0.1 - 0.3ha catchments 'typically' use decanting earth bunds[23];
- for areas > 0.3ha Dr Larcombe wrote[24] that:

> the primary earthworks stormwater treatment system to be used under the Landco SP proposal is a TP 90 compliant 3% pond [total volume of 300 m^3/ha of catchment], with a separate forebay and with chemical treatment of the stormwater discharged into all ponds.

A link between construction sediment control and post-construction stormwater management is that[25]:

> The Landco proposal requires, where practicable, the installation of ponds at the locations of the permanent stormwater ponds, to provide additional stormwater treatment during the earthworks period.

(3) Stormwater control: The Landco SP eschews NSCC's express commitment to a low impact design approach[26]. Wetlands and ponds are to be used as part of what the Landco SP describes as an "integrated approach to stormwater management"[27] but for much of the SPA [see

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22 Dr M F Larcombe, evidence-in-chief para 4.12 [Environment Court document 33].
23 Dr M F Larcombe, evidence-in-chief para 4.12 [Environment Court document 33].
24 Dr M F Larcombe, evidence-in-chief para 4.10 [Environment Court document 33].
25 Dr M F Larcombe, evidence-in-chief para 4.20 [Environment Court document 33].
26 Landco seeks to delete NSCC 9A.3.2.5.
27 Landco SP 9A.3.2 explanation/reasons.

below] no on-site mitigation measures are required and development would be able to rely on off-site measures in the form of public ponds/wetlands[28]. To this extent a more limited treatment train is afforded.

(4) Stream Protection Areas 1 and 2: The Landco structure plan also proposes to divide the LBSPA into two areas for the purpose of managing water quality and quantity. In LB Stormwater Management Area 1 (the upper catchment) "development is to incorporate on-site stormwater mitigation techniques that manage stormwater quality and help limit the quantity of stormwater run-off to predevelopment levels". "Pre-development" is defined in the same manner as in the NSCC SP. In the LB Stormwater Management Area 2 (the lower part of the structure plan area) "a high standard of mitigation of the stormwater generated from development is to be achieve so as to avoid significant adverse effects on ..... water quality, ecological values and aesthetic values" downstream of the discharge. Such mitigation "is to involve off-site measures" only. It is evident from Attachment "B" that NSCC's Area A incorporates a significantly larger part of the north Vaughan Slopes (North) than the corresponding Landco Area 1.

(5) Proposed Roads: Landco's SP shows a generally similar Proposed Road network to the NSCC SP. The Landco SP infrastructure map also shows a mix of on- and off-road footpaths and cycle-ways.

(6) Reserves: Landco SP Map: Designations and Special Provisions shows proposed reserves and potential reserve extensions. A number of existing reserves are shown as proposed, which is puzzling. Otherwise, the proposed reserves generally coincide with areas of land zoned LB 6 Recreation and Stormwater and LB 7 Recreation and Heritage Protection, which as we have previously described, are to vest on subdivision as various categories of reserve.

[28] Landco SP 17B.6.1.10(3)(a).

0.4 The four substantive steps towards a decision under the RMA

[20] The traditional fact/law/judgment division of civil cases inadequately describes the role of a local authority (or the Environment Court on appeal) in relation to a district or regional plan, a policy statement or a resource consent. We consider there are not three but four general steps in most proceedings under the RMA:

(1) fact-finding;
(2) the statement of the applicable law;
(3) risk predictions: assessing the probabilities of adverse effects and their consequences;
(4) the overall assessment as to what better achieves the purpose of the RMA.

[21] Steps (1), (2) and (4) are the traditional steps in legal decision-making, although under the RMA the fourth step involves more value judgements than Courts are usually entrusted with. The extra step under the RMA - step (3) - will be considered separately in this decision although it is usually subsumed in steps (1) or (4) without recognition of either its importance or of its separate characteristics. We consider that the assessment of future effects - that is, establishing our best and most accurate belief of the probability of each relevant alleged (future) effect and its consequences - is a separate and very important step.

[22] Accordingly we generally follow the four steps identified in the previous paragraph in the remaining parts of this decision:

- the facts (Part 1);
- the law (Part 2);
- predictions (Part 3)
- overall assessment (Parts 4 and 5).

In accordance with that scheme, we have largely confined the initial statement of substantive legal issues to Part 2. There are some exceptions: first there are two preliminary jurisdictional issues and one procedural issue which we deal with next in this Part; secondly, in Part 1 (the facts) we need both to resolve various procedural

issues and to refer to some interpretative aspects of section 6 of the RMA; and finally some procedural problems to do with the 'standard of proof' of predictions are resolved in Part 3 (predictions).

0.5 Jurisdictional issues

0.51 The Long Bay Society's appeal

[23] Because many of the witnesses, and Landco in its submissions, tended to make the issues look as if they were confined to a choice between the two structure plans, we record that the Long Bay Society's appeal was more wide-ranging than that. It sought[29]:

> (a) That the Structure Plan restricts any development within approximately 200 hectares of undeveloped land adjacent to the Long Bay Regional Park (as shown in Appendix C) so that it remains available to be designated as reserve, to form part of the Long Bay - Okura Great Park, and
>
> (b) That development otherwise be restricted so as to adequately safeguard visual amenities enjoyed by visitors to the Long Bay Regional Park, from all viewing locations within the park.
>
> (c) That the known heritage sites be zoned comprehensively (rather than on an ad hoc, piece meal basis) to fully protect the entire heritage landscape.
>
> (d) That no roading be permitted to cross or affect the wetlands of Vaughan's Stream or Awaruku Stream.
>
> (e) That development be restricted so as to adequately safeguard the water quality and ecosystems of the Long Bay - Okura Marine Reserve.
>
> (f) That the Awaruku Stream and any other creek flowing into the Marine Reserve be afforded the same level of restoration and on-going care as the Vaughan's Stream.
>
> (g) Any consequential relief which may be required as a result of allowing this appeal.
>
> (h) Such further or alternate relief as is appropriate in the circumstances.
>
> ...

We conclude that our jurisdiction is not restricted to consideration of the Council's or Landco's structure plans, although there are limits to how far we can go under paragraphs (g) and (h) of the Society's appeal without exceeding jurisdiction under Plan Change 6.

[29] Notice of Appeal dated 20 June 2006 by Long Bay-Okura Great Park Society incorporated para 8.

0.52 A supermarket?

[24] The second preliminary jurisdictional point is the NSCC's argument that some of the evidence called for Landco - about the desirability of, and benefits from, a supermarket[30] in the structure plan area - is irrelevant because the Court has no jurisdiction to consider providing for a supermarket. Dr Somerville referred to *re Vivid Holdings Limited*[31] as establishing that:

> ... any decision of the Council, or requested of the Environment Court in a reference, must be:
>
> (a) fairly and reasonably within the general scope of:
>
> (i) an original submission[32]; or
>
> (ii) the proposed plan as notified[33]; or
>
> (iii) somewhere in between[34]
>
> provided that:
>
> (b) the summary of the relevant submissions was fair and accurate and not misleading[35].

He then submitted that neither the original NSCC SP nor the Landco submission ever referred to a supermarket. As for the notified NSCC structure plan it provided for a village centre in its Long Bay 5 zone "to meet the day-to-day needs of residents living in the area", a range of compatible activities so that a mixed use focal point is created, and a maximum floor area of 200 m^2 for retail activities.

[25] Landco's submission on Plan Change 6 sought an 'LB 4 Zone: Neighbourhood Centre' and related objectives and policies. Those objectives and policies for the Long Bay 4 Zone: Neighbourhood Centre[36] did not refer to a supermarket or even to large-scale retailing. We accept, as Mr Galbraith QC fairly conceded in his opening[37] for Landco, that:

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30 Raised Landco's proposed rules 17B.5.1(b) and 17B.6.5.1(b).

31 [1999] NZRMA 467 at para (19).

32 *Countdown Properties (Northlands) Limited v Dunedin City Council* [1994] NZRMA 145; *Royal Forest and Bird Protection Society Incorporated v Southland District Council* [1997] NZRMA 408; *Atkinson v Wellington Regional Council* (W13/1999) is a recent example referred to by Mr Todd.

33 *Telecom NZ Limited v Waikato District Council* (A74/1997) at p. 4.

34 *CBD Development Group v Timaru District Council* (C43/1999).

35 *Re An Application by Christchurch City Council* (Montgomery Spur) (C71/1999).

36 This appears to have morphed into the LB5: Village Centre Zone.

37 Opening Submissions para 9.5.2 [Environment Court document 1].

> The issue of a supermarket was not specifically raised in submissions or at the Council hearing but the option of including one was clearly not foreclosed by the planning provisions sought by Landco.

[26] We were not referred to the notified summary of submissions so we are not able to say whether it fairly and accurately stated or implied that a supermarket was a possibility.

[27] It may be irrelevant under the *Vivid* test, but we record that in the Council's decision version of Plan Change 6, the provisions relating to a village centre remained the same, except for an amendment that increased the maximum gross floor area from 200 m^2 to 500 m^2. We were advised[38] that the idea of a supermarket was raised only in the evidence[39] for the hearing of these proceedings. In fact Mr Tansley's evidence[40] was that "the gross floor area [of a supermarket] would probably need to exceed 2,500 m^2".

[28] It was proposed by Landco in its original submission that 'initial built development and establishment of activities in accordance with a Concept Plan prepared for the entire LB 4 Zone' be limited discretionary. Counsel for Landco informed us that no maximum gross floor area was provided and no specific retail activities were listed in its submission.

[29] We have thought about this carefully, but in the end decide we need fuller facts, as well as argument, about the process of notification before we can decide the jurisdictional issue definitively. On the factual side we would have needed to see the relevant page(s) of the summary of submissions to see whether readers of the summary might be alerted to the scale inherent in Landco's submission. On the law we would have needed submissions on how to reconcile two High Court decisions: *Shaw v Selwyn District Council*[41] and *Clearwater Resort Limited v Christchurch City Council*[42]. In the circumstances we have decided not to resolve the jurisdictional issue, but reserve leave

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[31] NSCC's opening submissions, paragraph 9.4 [Environment Court document 1].
[39] The evidence of Mr P G Egerton, Mr M G C Tansley and Mr J T Baines for Landco.
[40] Mr M G C Tansley, evidence-in-chief para 5.5.2 [Environment Court document 25].
[41] [2001] NZRMA 399.
[42] HC, Christchurch AP 34/2002 and 35/2002, Wellington Young J, 14 March 2003.

for further evidence and submissions if the parties consider it is necessary to have this issue resolved in the light of our substantive determination. For the purposes of that determination we will assume we have jurisdiction to consider evidence about a possible supermarket within the LBSPA. Any jurisdictional limits on the size of its floor plan and activity status are matters we can resolve later (if necessary).

0.6 Procedural issue: The requirements of the RMA when preparing a district plan

0.61 Introduction

[30] Because these proceedings are about a plan change we must first identify the legal matters under which we must consider the evidence. As a preliminary point we record that the parties agreed that these appeals should be resolved under the Resource Management Act 1991 in its form prior to[43] the Resource Management Amendment Act 2005 because Variation 66 and Plan Change 6 were notified prior to 9 August 2005 (the date that the 2005 Amendment came into force).

0.62 Listing the requirements

[31] Counsel for Landco suggested that to identify the relevant considerations we should apply the 'tests' in *Eldamos Investments Limited v Gisborne District Council*[44]*:*

A. An objective in a District Plan is to be evaluated by the extent to which:
   1. it is the most appropriate way to achieve the purpose of the Act (s 32(3)(a)); and
   2. it assists the territorial authority to carry out its functions in order to achieve the purpose of the Act (s 72): and
   3. it is in accordance with the provisions of Part 2 (s 74(1)).

B. A policy, rule, or other method in a District Plan is to be evaluated by whether:
   1. it is the most appropriate way to achieve the objectives of the plan (s 32(3)(b)); and
   2. it assists the territorial authority to carry out its functions in order to achieve the purpose of the Act (s 72):
   3. (if a rule) it achieves the objectives and policies of the plan (s 76(1)(b)).

43 See section 131(1) of the Resource Management Amendment Act 2005.

44 W47/2005 at para 128.

[32] Dr Somerville QC of counsel for the NSCC, submitted in closing that *Eldamos* omits:

> - The requirement under section 75(2), as it was prior to its amendment in 2005, for the district plan to give effect to any national policy statement or New Zealand coastal policy statement, and not be inconsistent with any regional policy statement or regional plan for any matter specified in section 30(1);
> - The evaluation under section 32 needing to take into account the matters in section 32(4)(a) and (b).

That may not be completely fair to the Court in *Eldamos,* since the most obvious reading of the quoted paragraph is that it is simply an attempt to restate the requirements of section 32 of the Act. However, we accept that there is some unnecessary repetition in subparagraphs 2 of each of the *Eldamos* tests; and that *Eldamos* omits the reference to benefit/cost and risk analyses. With respect that makes the *Eldamos* 'tests' rather incomplete since everything else in section 32 is at best uninformative and merely states one requirement of the fuller list of considerations in section 74.

[33] We have other concerns with any purported application of *Eldamos* which suggests (contrary to *Eldamos* itself) that it gives a full summary of the statutory tests to be considered in the preparation of a district plan (or plan change). First such an approach attempts to fit the different, substantive, and arguably higher-order directions of sections 72, 74 and 76 into a section 32 (procedural) evaluation which is rather inappropriate. Secondly, if a full summary of all the statutory tests (i.e. not just section 32) is desired then it is preferable to start at the top end of the hierarchy since those objectives and policies influence what comes after. Thirdly, both *Eldamos* and section 74 omit some of the relevant considerations.

[34] A relatively comprehensive summary of the mandatory requirements[45] for district plans or plan changes - with the different statutory tests emphasised for convenience - is:

[45] Noting again that this is under the pre-2005 Amendment version of the RMA.

A. General requirements

1. A district plan (change) should be designed to **accord with**[46]**,** and assist the territorial authority **to carry out -** its functions[47] so as to achieve, the purpose of the Act[48].

2. When preparing its district plan (change) the territorial authority **must give effect to** any national policy statement or New Zealand Coastal Policy Statement[49].

3. When preparing its district plan (change) the territorial authority shall:

   (a) **have regard to** any proposed regional policy statement[50];

   (b) **not be inconsistent with**[51] any operative regional policy statement [52].

4. In relation to regional plans:

   (a) the district plan (change) must **not be inconsistent with an** operative regional plan for any matter specified in section 30(1) [or a water conservation order][53]; and

   (b) **must have regard to** any proposed regional plan on any matter of regional significance etc[54];

5. When preparing its district plan (change) the territorial authority must also:

   - **have regard to** any relevant management plans and strategies under other Acts, and to any relevant entry in the Historic Places Register and to various fisheries regulations[55]; and to consistency with plans and proposed plans of adjacent territorial authorities[56];

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46 Section 74(1) of the Act.
47 As described in section 31 of the Act.
48 Sections 72 and 74(1) of the Act.
49 Section 75(3)(a) and (b) of the Act.
50 Section 74(2) of the Act.
51 Note: under the Resource Management Amendment Act 2005 section 75(3)(c) now requires an operative RPS to be given effect to in a district plan.
52 Section 75(3)(c) of the Act.
53 Section 75(5) of the Act.
54 Section 74(2)(a) of the Act.
55 Section 74(2)(b) of the Act.
56 Section 74(2)(b) of the Act.

- **take into account any** relevant planning document recognised by an iwi authority; and
- not have regard to trade competition[57];

6. The district plan (change) must be prepared **in accordance with any** regulation[58] (there are none at present);

7. The formal requirement that a district plan (change) must [59] also state its objectives, policies and the rules (if any) and may[60] state other matters.

B. Objectives [the section 32 test for objectives]

8. Each proposed objective in a district plan (change) is **to be evaluated** by the extent to which it is the most appropriate way to achieve the purpose of the Act[61].

C. Policies and methods (including rules) [the section 32 test for policies and rules]

9. The policies are to **implement** the objectives, and the rules (if any) are to **implement** the policies[62];

10. Each proposed policy or method (including each rule) is to be examined, **having regard to its efficiency and effectiveness,** as to whether it is the most appropriate method for achieving the objectives[63] of the district plan **taking into account:**

(a) the benefits and costs of the proposed policies and methods (including rules); and

(b) the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods[64].

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57 Section 74(3) of the Act.
58 Section 74(1) of the Act.
59 Section 75(1) of the Act.
60 Section 75(2) of the Act.
61 Section 32(3)(a) of the Act.
62 Section 75(1)(b) and (c) of the Act (also section 76(1)).
63 Section 32(3)(a) of the Act.
64 Section 32(4) of the Act.

D. Rules

11. In making a rule the territorial authority must **have regard to** the actual or potential effect of activities on the environment[65].

E. Other statutes:

12. Finally territorial authorities may be required to comply with other statutes. Within the Auckland Region they are subject to:

- the Hauraki Gulf Maritime Park Act 2000;
- the Local Government (Auckland) Amendment Act 2004.

[35] We discuss the general considerations raised by A in the remainder of this part of this decision and again, where relevant, in Part 4.0 (overall consideration). We comment on B below. We also discuss aspects of B and C in Part 3.0 (Predictions) of this decision and then again in our overall consideration. Consideration of D (Rules) is largely premature in this interim decision. E (other statutes) is discussed in Part 2.0 (the law).

0.63 The territorial authority's functions

[36] Most of the territorial authority's functions specified in section 31 of the RMA are relevant in these proceedings. Integrated management[66] of effects is the core of these proceedings, with the other functions of the Council examples of that: there are natural hazards[67] - the steep slip-prone slopes - to consider; maintenance of the diversity[68] of indigenous plants and animals is an issue; as is (to a small extent) the mitigation of noise[69]. Finally, both proposed structure plans propose the control of subdivision[70] to carry out the Council's functions.

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65 Section 76(3) of the Act.
66 Section 31(1)(a) of the RMA.
67 Section 31(1)(b)(i) of the RMA.
68 Section 31(1)(b)(iii) of the RMA.
69 Section 31(1)(d) of the RMA.
70 Section 31(2) of the RMA.

0.64 Plan change is to accord with and achieve the purpose of the RMA

[37] Particular problems arise in the context of a plan change - such as Plan Change 6 we are considering - as to how it is to 'accord with'[71] and 'achieve'[72] the purpose of the Act where either the operative district plan contains (settled) objectives which the plan change does not seek to alter, or the district plan has a hierarchy of objectives and the plan change only seeks to change or add lower-order objectives.

[38] Jurisdictional problems may arise if a plan change does not seek to add any new objectives because then a submission seeking a new objective may not be 'on' the plan change - see *Canterbury Regional Council v Christchurch International Airport Limited*[73].

[39] Where there is a hierarchy of settled objectives, policies and methods there are two extreme possibilities. At one end of the continuum is the situation where none of the settled objectives and policies are proposed to be amended by the plan change. In that case they may not properly be proposed to be changed in a submission. Where there are higher level settled objectives then we agree with *Suburban Estates Limited v Christchurch City Council*[74] that Part 2 RMA considerations are largely subsumed in those settled objectives and policies of the district plan. At the other extreme is the position where the variation or plan change is clearly setting off in a direction of its own with different objectives and policies. In that case, as the Planning Tribunal (as the Environment Court was then called) stated in *Kennedys Bush Road Neighbourhood Association v Christchurch City Council*[75]*:*

> It must ... be remembered at all times when considering [Transitional and Proposed District] plans, that these proceedings relate to a change to those plans and therefore such a change, if considered otherwise desirable, should not be arbitrarily rejected merely because it may conflict with some arguable policy or objective which may at first sight appear to apply to it.

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71 Section 74(1) of the RMA.
72 Section 32(3)(a) of the RMA.
73 High Court, Christchurch, William Young J.
74 Decision C217/2001 at paragraphs [36] and [40].
75 Decision W63/1997 at p. 22.

We consider that principle, with the word 'arbitrarily' omitted as (we hope) unnecessary, is correct.

[40] This case is intermediate between those positions although in our view closer to the *Suburban Estates Limited* end of the continuum because (as will appear) submitters have not tried to, and probably could not - on the *Clearwater* principle - have acquired jurisdiction to, amend objectives and policies at a sufficiently high level in the district plan to carve out a completely separate, stand-alone plan change. That means we need to discuss the scheme of the district plan in some detail.

[41] There are further complications in this case arising out of other legislation - not the RMA - which make it unusual. We are faced with two sets of competing nearly 'settled' higher level objectives and policies. First there are the objectives and policies in the operative district plan. Secondly there are those contained in other plan changes which have not yet been approved or notified as operative, which is a scenario we do not think the RMA or its First Schedule ever contemplated. We will discuss both sets of higher-level objectives and policies in due course.

0.65 Section 32 of the Act

[42] Unlike local authorities[76] the Environment Court does not have an express duty under section 32 to consider alternatives, benefits and costs. However, Parliament has stated that the Court is 'not preclude[d]'[77] from taking into account the section 32 matters. As a matter of consistency with local authorities and out of respect for their reasoned decisions we consider it is usually desirable for the Environment Court also to carry out a section 32 evaluation to the extent justified by the evidence.

[43] Section 32 states (relevantly):

[76] See section 32(1)(c) of the RMA.
[77] Section 32A(2).

32 Consideration of alternatives, benefits, and costs

(1) In achieving the purpose of this Act, before a proposed plan, proposed policy statement, change, or variation is publicly notified, a national policy statement or New Zealand coastal policy statement is notified under section 48, or a regulation is made, an evaluation must be carried out by -

…

(c) the local authority, for a policy statement or a plan ...

(2) A further evaluation must also be made by -

(a) a local authority before making a decision under clause 10 ...

(3) An evaluation must examine -

(a) the extent to which each objective is the most appropriate way to achieve the purpose of this Act; and

(b) whether, having regard to their efficiency and effectiveness, the policies, rules, or other methods are the most appropriate for achieving the objectives.

(4) For the purposes of this examination, an evaluation must take into account -

(a) the benefits and costs of policies, rules, or other methods; and

(b) the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods.

(5) The person required to carry out an evaluation under subsection (1) must prepare a report summarising the evaluation and giving reasons for that evaluation.

(6) The report must be available for public inspection at the same time as the document to which the report relates is publicly notified or the regulation is made.

Significant changes were made to section 32 by the RMAA 2003, including introduction of the concept of risk. But before we turn to the subject of risk we must point out a peculiarity of the drafting of the new section.

[44] Subsection (3) states that an evaluation must examine certain matters (which are different) in relation to:

(a) each objective; and

(b) 'the policies, rules or other methods'.

The curiosity is that while section 32(4) appears to go on and state what is required of each examination or evaluation, on a closer reading of subsection (4) it only refers to

'policies, rules [and] methods', not to objectives. We infer, despite the apparent equality of subsection (4) with (3), that Parliament intended subsection (4) to be read as if it were a qualification of subsection 3(b) only. That is, no cost/benefit or risk analysis (see below) appears to be required in the evaluation of proposed objectives. Summarising the new section 32(3) and (4) to this point in relation to objectives we hold:

(1) they do not require (or preclude) a local authority (or the Environment Court) carrying out a cost/benefit and/or risk analysis of the objectives; but

(2) each objective needs to be examined as to whether it is the most appropriate way to achieve the purpose of the Act or, in these proceedings, the purpose of the settled higher order objectives.

Risk analysis

[45] The risk analysis required by section 32 refers back to the definition of 'effect' in section 3 of the Act. The word includes[78]:

> ...
> (f) Any potential effect of low probability which has a high potential impact

The conjunction of 'low probability' and 'high potential impact' strongly suggests the concept of risk because the relationship between probabilities of an effect and its consequences or costs is incorporated in the definition of 'risk'. The relationship can be expressed as a simple product:

Risk = Probability of an effect X Cost of consequences.

So the RMA requires local authorities to examine both the probability of an effect and its consequences or costs (i.e. the risk).

[78] Section 3 of the Resource Management Act 1991.

[46] Rather than describing the evaluation of probabilities as “fact-finding”, it is preferable in our view to describe it as risk assessment. That follows quite neatly from the definition of ‘effect’ in section 3. It is also, as we have seen, appropriate under section 32 of the RMA with its reference to risk. Accordingly we hold that assessing the probability of each alleged effect and its consequences is a separate and necessary step in the Court’s judicial functions under section 32 as well as for the reasons we discuss in Part 3.0. We consider the evaluation required by section 32 - to the extent we can on the evidence we were given - in Part 4 of this decision.

1.0 The facts

1.1 Fact-finding by consent authorities and the Environment Court

[47] The fact-finding necessary in this proceeding is to describe the existing environment (i.e. existing facts) and the history (i.e. past facts) of the Long Bay area. To the extent that there is any dispute over the facts that must be resolved on the civil standard of proof. That standard is usually described as being 'on the balance of probabilities': *Gould v Rodney District Council*[79] relying on the earlier High Court decision in *McGregor v Rodney District Council*[80].

[48] In this case some of the most contentious facts relate to the description of the environment and landscape of the LBSP area. For example, we may need to resolve disputes between witnesses over where any outstanding natural landscape begins or ends. On those issues the civil standard expressed as 'on the balance of probabilities' is not apt because it really becomes just a metaphor about the scales of justice. Instead the Court should decide such subjective, value-laden issues on the more formal (but here more useful) standard of proof of facts. That is, a fact is determined on the preponderance of the evidence having regard to the seriousness of the allegation. The formulation of the first part of the test - 'on the preponderance of the evidence' - appears to have been more often articulated in the USA than in Mew Zealand. We adopt the standard stated by the United States Supreme Court in *Price Waterhouse v. Hopkins*[81] where it wrote that "under [c]onventional rules of civil litigation ... parties ... need only prove their case by a preponderance of the evidence" and that "[e]xceptions to this standard are uncommon". The second part of the test - '... having regard to the seriousness of the allegation' - was set out in the House of Lords decision in *re H (Minors)*[82]*;* and confirmed by our Court of Appeal in *Z v Complaints Assessment Committee*[83].

[49] We now discuss the facts under the following headings:

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79 [2006] NZRMA 217 at para [120] (HC).
80 [2004] NZRMA 481 (at para [34] (HC).
81 490 U.S. 228, 253 (1989).
82 [1996] AC 563 (HL).
83 [2008] 1 NZLR 65 at para [37] (NZCA).

- the Long Bay Structure Plan Area (Part 1.2)
- geology, geomorphology and groundwater (Part 1.3)
- ecosystems and terrestrial ecology (Part 1.4)
- freshwater ecology (Part 1.5)
- stormwater and erosion (Part 1.6)
- marine ecosystems (Part 1.7)
- the coastal environment (Part 1.8)
- the history of Long Bay (Part 1.9)
- the landscape (Part 1.10)
- traffic and transportation (Part 1.11).

1.2 The Long Bay Structure Plan Area

[50] The LBSP area is zoned "Residential Expansion" in the North Shore City District Plan. The legal implications of that zoning are considered in Part 2.0 (The Law) of this decision.

[51] In shape the LBSP area is roughly a right-angled triangle. Its three corners are:

(1) the anchoring right angle which is about 100 metres south of Awaruku Stream at the intersection of Beach Road and Long Bay Drive;
(2) its western corner which is on Okura River Road about 100 metres north of the intersection of that road with East Coast Road; and
(3) its northern corner is at a point on the ridge between Vaughans Road and Piripiri Point above the northern end of Pohutukawa Bay.

Its three sides are:

(a) the **eastern** edge of the LBSP area which is approximately parallel to the coast of the Hauraki Gulf. In fact the real boundary is the irregular boundary of the Long Bay Regional Park which is sandwiched between the LBSP area and the mean high water mark ("MHWM"). Below the

MHWM is the Long Bay Marine Reserve which is at present the only gazetted marine reserve adjoining a city;

(b) the **northwestern** boundary (the hypotenuse of the triangle) of the LBSP area runs southwest from the northernmost point along the Piripiri Point-Vaughans Road ridge and then follows Vaughans Road and runs along the crest of the ridge separating the Vaughans Stream catchment from the Okura catchment (to the north);

(c) from the Awaruku Stream mouth the **southern** boundary runs along the rear boundary of properties fronting Glenvar Road, to the south of Coventry Way, then along Glenvar Road (west) and across the Upper Vaughans Stream to Vaughans Road.

[52] Existing land uses within the LBSPA are pastoral, interspersed especially in the upper Vaughans Stream catchment with patches of remnant forest and some exotic trees, an urban enclave (houses and two schools) and scattered life-style blocks in the upper catchment and along Vaughans Road.

[53] The southern area of Long Bay Regional Park, south of Vaughans Stream, contains[84] a ranger station, a work depot, public information boards, car parking, toilet blocks, BBQs, shade shelters, a food kiosk, a restaurant, a children's playground and a miniature railway. The northern part contains an historic homestead, coastal bush and a coastal walking track.

1.3 Geology, geomorphology and groundwater

1.31 Introduction

[54] The geology and geomorphology of the LBSP area are important in these proceedings for at least two reasons. First they need to be understood in order to assess the stability of the slopes on which both structure plans propose urban development. Secondly the geology and geomorphology show the skeleton of the landscape and how it grew thus enhancing understanding of the landscape issues. We read the evidence and heard the cross-examination of the following experts: Mr G Alexander (for the ARC), Mr S Vaughan (for NSCC) and Mr D Johnson (for Landco).

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[84] Mr N W Olsen, evidence-in-chief para 7.1 [Environment Court document 57].

1.32 Geology

[55] The geology of the Long Bay SP area comprises first[85] a range of estuarine, beach, and alluvium within the valley floors and on some elevated terraces. Secondly there are weathered soils on the underlying rock mass within the ridgelines and faces of the site. The rock mass - described technically as the East Coast Bays Formation of the 'Waitemata Group' - generally comprises site-wide bedding dipping very slightly to the southwest. It includes a slightly stronger, relatively thick, and locally steeper-dipping Parnell grit sandstone unit (in the Glenvar West area). Joint fractures in the rock mass follow a regional trend of steeply dipping NE-SW and NW-SE defects. There are bedding planes between the beds (or strata) of rock which represent periods when there was no deposition of sand or silt, and then a change in particle size and composition making the next layer.

[56] As a background to stability issues the experts explained[86] that 'bedding plane shears' - in laypersons' terms, displacements along the planes - are relatively common in New Zealand's weak tertiary rocks which include the Waitemata Group. The experts agreed[87] that two types of bedding plane shears are present at Long Bay. First there is a shallow contact bedding shear surface (related more to the weathering process) beneath the weathered soil mantle on top of the underlying rock mass. Secondly there are wider scale tectonic bedding shears at discrete locations within the underlying rock mass itself. These two types of shears are important controlling factors in the location and scale of the landsliding which exists at Long Bay and is reflected in the resultant geomorphology. The experts[88] agreed that "urban development at Long Bay without due consideration being given to slope instability within the underlying landform may trigger remobilisation of existing slope instability". They pointed out that two of the three significant earthworks projects (Long Bay Primary School and at the Ashley Avenue Reserve) carried out within the overall Long Bay area since the late 1970s have experienced slipping.

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85 Agreed statement No. 3 'Geotech" para 2.2 [Environment Court document 6/3].
86 Agreed statement No. 3 'Geotech" para 2.2(g) [Environment Court document 6/3].
87 Agreed statement No. 3 'Geotech" para 2.2(e) [Environment Court document 6/3].
88 Agreed statement No. 3 'Geotech" para 2.2 [Environment Court document 6/3].

[57] A further aspect of the geology is that[89] 'there is local evidence of contact shears between the soil mantle and the underlying rock mass that have developed as a function of stress reduction, weathering, groundwater ingress, softening, slope deformation and general soil creep and slope movement caused by gravity.' The experts explained that the resulting composite surface is roughly parallel to the ground surface[90]:

> In combination, contact shear surfaces form a "carpet of instability" draping down the slope with steps in the slope morphology as the soil debris moves over the steps formed in the basal slide surface due to more resistant beds of underlying rock or vertical connections between sub-horizontal contact shear surfaces as described above. These steps in most cases are clearly evident in the ground surface morphology.

The geotechnical experts also alerted[91] us to the fact that at Long Bay there are known tectonic bedding shears - that is, we understand, existing and potential displacements caused by movements in the earth's plates - in the East Coast Bays Formation rock mass. These have the potential to allow a deeper and more cohesive landslip than a 'debris failure'[92] to occur at greater depth within the rock mass than the potential slips already described.

1.33 Geomorphology

[58] The Long Bay SP area is in a relatively old landform[93] which includes areas of almost stable but deep seated landslides and more active shallow landsliding. The landform has changed over 10,000 years or more. It has experienced major climatic changes (including significant sea-level change) over longer time periods and vegetation changes, including deforestation and land use changes over the past 200 years. It has also been shaken by one or more significant earthquakes during this time.

1.34 Groundwater conditions

[59] The natural groundwater system operating at Long Bay comprises[94] two interlinked components:

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89 Agreed statement No. 3 'Geotech" para 2.2(j) [Environment Court document 6/3].
90 Agreed statement No. 3 'Geotech" para 2.2(n) [Environment Court document 6/3].
91 Agreed statement No. 3 'Geotech" para 2.2(t) [Environment Court document 6/3].
92 'Translational failure'.
93 Agreed statement No. 3 'Geotech" para 2(a) [Environment Court document 6/3].
94 Agreed statement No. 3 'Geotech" para 3 [Environment Court document 6/3].

(a) a shallow system within the cloak[95] of weathered soil on ridge crests and in the slope debris on sloping ground. This responds rapidly to rainfall; and

(b) a deeper system within the underlying rock mass which responds relatively slowly to rainfall.

Apparently, recharge into the deeper groundwater system depends on how much rain falls and on how much water can seep through the near surface soils into the rock mass below.

1.4 Ecosystems and terrestrial ecology

1.41 Introduction

[60] As to the scale and significance of the terrestrial ecosystems of the LBSP area, we read and heard the evidence of these experts: Ms S Flynn (for NSCC) a biologist; Mr G Don (for Landco) a biologist; Dr R O Gardner (for Landco) a botanist; Mr D Slaven (for Landco) a biologist; Dr W B Shaw (for ARC) an ecologist; and Mr K Corbett (for Okura Environment Group) an herpetologist.

1.42 Flora

[61] Excluding a mix of scattered existing development mainly east of Ashley Avenue, the LBSP area is a mixture of bush, pasture and some large lot rural-residential development (mainly along the ridges and spurs). Indigenous vegetation lines some of the streams and gullies, while some exotic plantings occur on the ridges and north-facing slopes[96]. Remnant forests are mixed broadleaf and podocarp species. The tall podocarp species kahikatea 'dominates along the margins of ... Vaughans Stream ... '[97] while broadleaf species such as puriri, taraire, titoki, rewarewa and white maire 'tend to predominate on hillslopes and in the catchment headwaters'[98]. We also noticed on our site inspection some kauri trees and nikau palms. The LBSP area is at the northern end

95 'Mantle' is the technical term.

96 Ms S M Flynn, evidence-in-chief paras 3.8 - 3.9 [Environment Court document 13].

97 Ms S M Flynn, evidence-in-chief paras 3.10 [Environment Court document 13].

98 Ms S M Flynn, evidence-in-chief paras 3.10 [Environment Court document 13].

of what ecologists call the Tamaki Ecological District[99], one of 268 such districts into which New Zealand has been divided.

[62] There is a medium-sized natural wetland along the lower reaches of Vaughans Stream. The upper part of the wetland contains '... a good diversity of wetland vegetation, including raupo, native sedges and manuka-kanuka scrub interspersed with nikau and young kahikatea'[100]. The lower part of the wetland is 'degraded'[101] and comprises mostly exotic vegetation.

[63] The eastern end of the LBSP area abuts the Long Bay Regional Park. The hillslopes of the Regional Park are either regenerating native coastal forest, or pasture, some of which has been recently planted with native shrubs and trees. The flats in the Long Bay Regional Park are parkland with exotic trees separating mown lawns along the edges of the sandy beach.

[64] Dr Gardner described five general areas as being 'high' value terrestrial habitats under the criteria described in the 'Protected Natural Areas Programme'. Those habitats are most easily identified by referring to the streams which run through them and are coloured dark green on attachment "A"[102] to this decision:

(1) The Vaughans Slope Forest remnant (east)[103] on stream 1C;
(2) The Vaughans Slope Forest remnant (west)[104] on stream 4;
(3) The Vaughans Stream upper wetland[105] - coloured pink on plan "A";
(4) The Vaughans Stream margins[106] between streams 3 and 10[107] on the main stem;
(5) The Glenvar Slopes Forest remnant[108] (at the head of stream 3).

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99 Ms S M Flynn, evidence-in-chief para 3.7 [Environment Court document 13].
100 Ms S M Flynn, evidence-in-chief paras 3.11 [Environment Court document 13].
101 Ms S M Flynn, evidence-in-charge paras 3.11 [Environment Court document 13].
102 A copy of Dr Kettle's Exhibit DK 07.
103 Area 9 on Dr R O Gardner's Figure 1 [Environment Court document 40].
104 Area 8 on Dr R O Gardner's 1 Figure [Environment Court document 40].
105 Area 2 on Dr R O Gardner's Figure 1 [Environment Court document 40].
106 Areas 3, 4, 10 and 11 on Dr R O Gardner's Figure 1 [Environment Court document 40].
107 See Dr R O Gardner's Appendix 1 [Environment Court document 40].
108 Areas 5, 6 and 7 on Dr R O Gardner's Figure 1 [Environment Court document 40].

Ms Flynn agreed with all those assessments, but arrived there by a different method. She applied four (different) criterial[109] as to the rarity or distinctiveness of the areas, their representativeness, their ecological context and finally, their sustainability. She also added a further area:

(6) The Upper Catchment forest remnant[110] (streams 11, 13, 14, 15 and 16).

Both the NSCC SP and the Landco SP propose in general terms that high value terrestrial habitat be protected and enhanced[111], although, as we shall see, there is some disagreement as to how that might be achieved.

1.43 Fauna

[65] Of New Zealand's approximately 90 lizard species[112] three are found in the LBSP area. Two skink species have been found[113] - copper and ornate - usually in the vicinity of bush remnants[114]. Ornate skinks are a 'threatened species in gradual decline'[115] although Mr Corbett, a herpetologist with world-wide experience, considers that the decline may be faster than gradual. There was disagreement between the experts over what is known about skinks in most of the LBSP area. Ms Flynn wrote[116] that 'comprehensive lizard surveys have been undertaken throughout the LBSP area'. However, Mr Corbett, who is more of a lizard expert than Ms Flynn (whose general expertise we appreciate), denied the comprehensiveness of the work to date which he characterised[117] as 'sample surveys'. He considered that[118] 'there is bound to be a very large area of land from which Skinks will need to be rescued ...'. However, Mr Corbett's evidence-in-chief that[119] '... we still do not know where the key populations or species "hot spots" are' needs to be qualified by his subsequent thoughts. In his rebuttal

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109 Ms S M Flynn, evidence-in-chief paragraphs 4.5 and 4.6 [Environment Court document 13].
110 Ms S M Flynn, evidence-in-chief para 4.17 referring to NSCC's Map 5 'Long Bay Structure Plan Terrestrial Ecology' [Environment Court document 13].
111 Dr R O Gardner, evidence-in-chief para 6.1 [Environment Court document 40].
112 Mr K Corbett, evidence-in-chief para 41 [Environment Court document 73].
113 Mr K Corbett, evidence-in-chief para 5.1 and rebuttal evidence para 1.6 [Environment Court documents 73 and 73A].
114 Ms S M Flynn, evidence-in-chief para 3.14 [Environment Court document 13].
115 Ms S M Flynn, evidence-in-chief para 3.14 [Environment Court document 13].
116 Ms S M Flynn, evidence-in-chief para 3.14 [Environment Court document 13].
117 Mr K Corbett, rebuttal evidence para B1.1 [Environment Court document 73A].
118 Mr K Corbett, evidence-in-chief para 5.5 [Environment Court document 73].
119 Mr K Corbett, evidence-in-chief para 5.3 [Environment Court document 73].

evidence he produced photographs of good 'skink habitat'. Based on those photographs it emerged at the hearing that a key habitat for skinks is the steep bank along the coastal scarp which winds around the eastern end of the Awaruku headland. This bank is covered in long grasses - much of it the introduced Kikiyu grass which is apparently superb habitat for skinks, because its length and wiriness give them good cover from predators such as rats and cats. As it happens, a large part of the bank has been acquired by the ARC. Further, Mr Corbett conceded that the northern side of the Awaruku headland, west of the farm cottages, and in the vicinity of a red shed, is known skink habitat. Otherwise we accept his evidence[120] and concern that '... the larger grassland area of bluffs, ridges and gullies north of Vaughans Stream had still not been assessed ...'

[66] Mr Corbett also gave evidence about there being Forest Geckos (a nocturnal species) in the upper Vaughans catchment outside the LBSPA and unconfirmed reports of occasional Auckland Green Geckos in the same area[121]. We infer from his rebuttal statement that he considers these species are likely to also be present in neighbouring LBSPA "bush patches"[122].

[67] Twenty-eight bird species have been recorded in the LBSP area including, importantly, kereru and kaka which are classified by the Department of Conservation as 'threatened' species[123].

1.44 Ecosystems

[68] Mr Shaw, the ecologist called by the ARC, gave evidence that the Tamaki Ecological District has been particularly affected by habitat loss, with only 6.9% of its land now covered in indigenous vegetation. That figure is of interest because Mr Shaw then wrote[124]:

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120 Mr K Corbett, rebuttal evidence para A1.3 [Environment Court document 73A].
121 Mr K Corbett, evidence-in-chief para 4.4 [Environment Court document 73].
122 Mr K Corbett, rebuttal evidence para 1.7 [Environment Court document 73A].
123 Ms S M Flynn, evidence-in-chief para 3.20 [Environment Court document 13].
124 Mr W B Shaw, evidence-in-chief para 7.12 [Environment Court document 50].

10% remaining has been regarded, since the early 1980s, as being a critical threshold for vegetation loss, but increased scientific understanding means that 20% is now considered to be that critical threshold.

[69] Section 6(c) of the RMA requires a local authority to recognise and provide for - as a matter of national importance - 'the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna'. Ms Flynn referred to an often quoted (but not produced) paper by Drs Norton and Roper-Lindsay[125] in which they propose that the following criteria should be used for determining the ecological significance of a site. As described by Ms Flynn, the criteria are:

1. Rarity and distinctiveness, ie, the site supports a species that is:
   - known to be threatened, or
   - at its national distributional limit, or
   - endemic to the area, or
   - locally uncommon.

2. Representativeness, ie, the site supports an ecosystem that is:
   - less than c. 10% of its former extent in the ecological district, or
   - a high quality example of its type, where less than c. 20% of this ecosystem remains in the ecological district c.f. its former extent.

3. Ecological context, ie, the site:
   - enhances connectivity between patches, or
   - buffers or similarly enhances the ecological values of a specific site of value, or
   - provides seasonal or "core" habitat for specific indigenous species.

4. Sustainability, i.e., a site is considered sustainable if:
   - key ecological processes remain viable or still influence the site, and
   - key ecosystems within the site are known to be or are likely to be resilient to existing or potential threats under some realistic level of management activity, and
   - existing or potential land and water uses in the area around the site could be feasibly modified to protect ecological values.

Ms Flynn wrote that:

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123 D A Norton and J Roper-Lindsay "Assessing significance for biodiversity conservation on private land in New Zealand" New Zealand Journal of Ecology 28 at pp. 295-305.

> ... a site is considered ecologically significant in terms of section 6(c) of the Act if it scores positively for one or more of the 'site' criteria [1. to 3.] and positively for the 'sustainability' criterion [4.].

[70] Mr Shaw's ecological evidence and the evidence on the topic of freshwater ecology (discussed next) suggests to us:

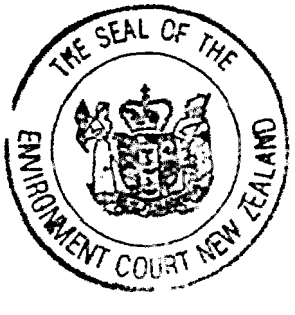
- that in the Norton and Roper-Lindsay criterion 2, only the second factor need apply, omitting the reference to 'a high quality example'. The 'representativeness' criterion would then read:

> 2. Representativeness, i.e. the site supports an ecosystem where less than c. 20% of the type of ecosystem remains in the ecological district ...

- that at least two other factors might possibly need to be included: the function of a site as part of an ecosystem (presumably in criterion 3); and the potential of a site for rehabilitation (in criterion 4).

We are rather troubled as to what the second and third components of criterion 4 mean, and whether they go outside the meaning of significance and start to second-guess the outcome of finding a habitat is 'significant'. There is a danger that ecologists will stray outside their area of expertise when trying to apply criterion 4 as it is currently worded. In the absence of evidence and/or submissions on the issue we are prepared to accept the Norton/Roper-Lindsay tests in the form stated as a working test in this case for significance under section 6(c) of the RMA but with considerable doubts about the relevance of part of criterion 4 and with the criteria qualified as we have mentioned.

[71] While, as we have recorded, Dr Gardner described certain forest remnants as being of 'high' value, Ms Flynn went further[126] and directed her attention to section 6(c) of the RMA:



[126] Ms S M Flynn, evidence-in-chief para 4.17 [Environment Court document 13].

> In my opinion, all bush remnants identified [on the NSCC overlay] ... are ecologically significant in the context of section 6(c) of the RMA. All remnants meet one or more of the "rarity/distinctiveness" "representativeness" and "ecological context" criteria, and all meet the "sustainability" criteria, assuming weeds and pests are controlled, the scale of subdivision and development in the surrounding upper catchment is controlled in accordance with [NSC]SP provisions, and that rehabilitation of buffers and linkages is undertaken as per the [NSC]SP "Landscape Protection Area - Ecological Stormwater" overlay.

[72] For the ARC Mr Shaw seemed to go even further when he concluded that[127]:

> All remaining examples of indigenous vegetation and habitats of indigenous fauna of any size and/or importance (say, for rare species) should be considered to be ecologically significant in terms of ... Section 6(c) of the Resource Management Act.

Based on his opinion[128] we find that there are two other qualifying patches of indigenous vegetation not shown on attachment "A" which bring the total of significant areas under section 6(c) to eight. They are:

(1)-(6) as listed earlier in this part of the decision;

(7) the kahikateas and other endemic trees lining stream 9A for the last 90 metres prior to its confluence with Vaughans Stream; and

(8) the patch of regenerating puriri with an under-canopy of young nikau, karaka, kohekohe (and some pines and loquats) also in stream 9A.

[73] Mr Shaw also concluded[129] in relation to other aspects of the ecology of the LBSPA:

> The presence of a national level "Acutely Threatened"[130] land environment [the Vaughans Flats] in the lower Vaughan's Stream, adjacent to the Regional Park boundary, places a high priority on the need to address ecological restoration within this area (and also protection of freshwater wetlands). This is a national level priority in terms of the national policy guidelines on biodiversity.

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127 Mr W B Shaw, evidence-in-chief para 8.4 [Environment Court document 50].
128 Mr W B Shaw, evidence-in-chief para 8.4(a) [Environment Court document 50].
129 Mr W B Shaw, evidence-in-chief para 8.4 [Environment Court document 50].
130 Mr W B Shaw, evidence-in-chief para 7.2(a)(iii) [Environment Court document 50].

> The presence of threatened species such as kereru and ornate skink is also a national level priority in the 'Statement of National Priorities for Protecting Rare and Threatened Biodiversity[131] ... All of the structure area is within threatend land environments, which places additional emphasis on the need for ecological restoration.

1.5 Fresh water ecology

1.51 Introduction

[74] The factual issues for the Court in relation to freshwater ecology are:

(1) What fish, invertebrates, and other organisms live in Vaughans Stream and Awaruku Stream and their tributaries?

(2) What is the scale and extent of the wetland, stream and estuarine habitat in the streams?

(3) What biological/ecological values do the streams have?

(4) How do Vaughans Stream and Awaruku Stream compare with others - district-wide? regionally? nationally?

[75] We read evidence and heard cross-examination of:

- Dr V F Keesing and Dr W F Donovan both freshwater ecologists, for Landco;
- Dr I Boothroyd a freshwater ecologist, Dr D A Kettle an engineer, Mr J F H Heijs an infrastructure engineer, Mr T R Schueler a stormwater expert for the NSCC; and
- Dr S M Parkyn, another freshwater ecologist, and Mr I G Jowett, a scientist qualified in engineering, and specialising in freshwater habitats, for the Auckland Regional Council.

[76] We refer to attachment "A". That shows Vaughans Stream and the part of Awaruku Stream within the LBSP area, and identifies:

131 (Mfe and DOC 2007).

(1) each of the subcatchments numbered as 1-16 on the map;

(2) various tributaries by letter (e.g. '1D') within the subcatchment;

(3) the land-types categorised as one of bush/existing reserves/pasture/ compacted pervious/impervious;

(4) the mouth of Vaughans Stream; the tidal area; the wetland and the 100 year floodplain;

(5) Awaruku Stream mouth and inundation area.

1.52 What fish and other animals live in Vaughans and Awaruku Streams?

[77] Nine indigenous species of fish have been recorded in Vaughans Stream and its small tributaries. The most common[132] fish are inanga *(Galaxias maculatus)*, banded kokopu *(G. fasciatus)* and common bully *(Goblomerphus cotidianus)*. Two exotic pest fish species have been recorded - koi carp and mosquito fish. There are two eel species; short fin eel *(Anguilla australis)* and long fin *(A. dieffenbachii)*. The latter is listed as a threatened[133] species by the Department of Conservation. There is also a single record of another threatened species, giant kokopu *(Goblomerphus gobiodies)* although at least one expert, Dr Keesing, is dubious[134] about its presence since it has not been recorded before or after the one occasion in 2000 and even then it was (mis-?)identified in its 'whitebait' form[135]. Fourteen species of fish have been recorded in the Awaruku Stream including what Dr Donovan described as chronically threatened longfin eel and giant kokopu. The most commonly recorded species included longfin eel, common bully, inanga and banded kokopu[136].

[78] The two catchments (i.e. Vaughans Stream and Awaruku Stream) hold many species of macroinvertebrates including the three sensitive "EPT' taxa - mayflies *(Ephemeroptera)*, caddisflies *(Plecoptera)* and stoneflies *(Trichoptera)*. The sensitivity of these three taxa has caused scientists to use their presence and numbers as a 'biometric' to assess the condition of a stream. Two other macroinvertebrates of

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132 Dr V F Keesing, evidence-in-chief para 11.15 [Environment Court document 37].

133 Dr V F Keesing, evidence-in-chief para 11.15 [Environment Court document 37] and Dr I K G Boothroyd, evidence-in-chief para 3.12 [Environment Court document 11].

134 Dr V F Keesing, evidence-in-chief para 11.1 [Environment Court document 37].

135 Dr I K G Boothroyd, evidence-in-chief para 5.11 [Enviromnent Court document 11].

136 Dr W F Donovan, evidence-in-chief paras 5.30 and 5.32 [Environment Court document 30].

particular interest in Vaughans Stream are the mayfly species, *Tepakia caligara* (which is nationally threatened[137]) and koura *(Paranephrops planifrons).*

1.53 What freshwater/estuarine habitats are there?

[79] The next question is what are the habitats in Vaughans Stream? In order to understand the discussion of freshwater habitats we record that streams are often categorised by 'order' [138] as follows:

- a zero order stream is ephemeral, temporary or intermittent[139];
- a first order stream is a stream with no tributaries (i.e. a headwater stream)[140];
- a second order stream is downstream of the confluence of two first order streams[141].

1.54 What biological/ecological values do the stream have?

[80] We consider the streams from the head of the catchments. The Upper Vaughans Stream tributaries are first order streams and were described by Dr Boothroyd as[142]:

> Generally hav[ing] less water than the downstream tributaries, slow flows, incised channels, minimal stock access, and unmodified riparian vegetation comprising of native bush and scrub interspersed with pasture grasses. The upper tributaries generally support a diverse invertebrate fauna comprising of a range of pollution sensitive and tolerant taxa. The upper tributaries provide potential banded kokopu *(Galaxias fasciatus)* habitat because they are typically well vegetated, undisturbed, and small with stable pools.

A little further downstream[143]:

> The high value riparian vegetation provides good stream shade and a good source of woody debris into the stream to be used as aquatic habitat and shelter for benthic invertebrates and fish. Furthermore, the upper reaches provide a source of invertebrate colonists, woody debris, and food ... to downstream reaches. The upper reaches support a diverse fish and benthic

137 Dr V F Keesing, evidence-in-chief para 3.8 [Environment Court document 37].
138 Dr S M Parkyn evidence-in-chief para 35 [Environment Court document 49].
139 Dr S M Parkyn, evidence-in-chief para 3.1 [Environment Court document 49].
140 Dr S M Parkyn, evidence-in-chief footnote 3 [Environment Court document 49].
141 Dr S M Parkyn, evidence-in-chief footnote 3 [Environment Court document 49].
142 Dr I K G Boothroyd, evidence-in-chief para 4.17(f) [Environment Court document 11].
143 Dr I K G Boothroyd, evidence-in-chief para 4.17(e) [Environment Court document 11].

invertebrate fauna of high ecological value including banded kokopu, redfin bully *(Gobiomorphus huttoni),* EPT taxa, and koura *(Paranephrops planifrons).*

[81] From about Node 5 in Vaughans Stream as shown on attachment "A" there is, at the top end of the main Vaughans Stream's floodplain, a wetland with a series of roughly defined channels[144]. Stock have access to the wetland but it still supports 'a diverse benthic invertebrate fauna including EPT taxa ...'[145]. The lower reaches of Vaughans Stream as it wanders across its flood plain to the sea, and stream 2A at the edge of the influence of saltwater are inanga spawning areas[146]. Finally, streams 0 and 1 drain into the lower reaches of the Vaughans Stream from the north side. These streams run, for the most part, through grazed pasture with stock access, so there is little shade and the banks are trampled. They are in poor condition.

[82] Ecological values can be defined and categorised[147] by a large range of attributes (e.g., function, habitat, food webs), 'biotic groups' (e.g., fish and invertebrates and other fauna) and at different scales (i.e. local, regional and national). To assess and compare ecological values using some of those different categorisations ecologists have developed a suite of measures of the state of the environment which they call macroinvertebrate biometrics[148].

[83] To ascertain the values of the tributaries of Vaughans Stream, Dr Keesing carried out a great deal of research both in the catchments and in previous reports and produced a table 1 showing their biological values. We reproduce his table 1 below but with the following changes[149]:

(1) we have added a new row at the top under the heading 'Stream Codes' showing each stream number as we understand it to be on Dr Kettle's plan DK07, being Attachment "A" to this decision;

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144 Dr I K G Boothroyd, evidence-in-chief para 4.17(c) [Environment Court document 11].
145 Dr I KG Boothroyd, evidence-in-chief para 4.17(c) [Environment Court document 11].
146 Dr I K G Boothroyd evidence-in-chief para 4.10 [Environment Court document 11].
147 Agreed Statement 13 "Freshwater Ecology" para 12 [Environment Court document 6/13].
148 MCI, QMCI, number of EPT, percentage EPT, number of Taxa as described in the freshwater ecologists' joint statement para 13.
149 Dr V F Keesing, evidence-in-chief para 19 [Environment Court document 37].

(2) we have reversed the second two lines so that the tributaries as identified in annexure "A" to this decision come first and Dr Keesing's numbering system is second.

Table 1: Biological values of sampled tributaries

Biological metric	Stream Codes								
	NSCC 10-16 Middle-upper main stem	NSCC 1E Lower central tribs	NSCC 1A KMA (A-B-C) North tribs	NSCC 1B, 1C, 1D KMA (D-E) North tribs	NSCC 4, 6, 7 KML Tribs 4, 5 & 6, central-north tribs	NSCC 9A KMA trib 3 Glenvar	NSCC 3B, 3C School tribs	NSCC Awaruku Awaruku tribs	NSCC 2 Stream 5.01
		BML 3.01, 6.03, 6.02	BML 7.01, 7.02, 7.03	BML 7.04, 7.05, 7.06	BML 3.02, 3.04, 3.06	BML 2.02	BML 4.02, 4.04	BML 11.02-11.04	BML 5.01
MCI-sb[150]	moderate	low	low	low	moderate	low	low	low	low
invert diversity[151]	high	low	moderate	moderate	low	low	low	low	low
EPT[152]	high	none	very low	none	low	none	low	none	low
fish (general)	high	none	low	moderate	moderate	low	low	low	moderate
fish diversity	high	none	low	moderate	moderate	low	low	low	low
fish rarity	none	none	none	none	none	none	none	none	none
aquatic vegetat-ion presence	low	low	low	low	low	low	low	low	low
riparian	low (high above wetland centrally)	low (none)	low	low (moderate in bush trib)	high	low (except first 100 m of trib)	high (accept-ing pipe sections)	low	low
physical habitat	moderate	low	low (moderate in gorse area)	low (moderate in bush area)	high	low (except first 100 m of trib)	high (accept-ing pipe sections)	low	low
fish passage	high	moderate (connect-ion issues)	high	high	high	low	moderate (connect-ion issues)	low (except climbers)	high
ARC habitat score	moderate-high	low	low-moderate	low	moderate	low (moderate in lower 100 m)	low-moderate	low	low
average biological value	**high**	**low**	**low**	**moderate**	**moderate**	**low**	**low-moderate**	**low**	**low**

[84] On the basis of his research Dr Keesing concluded[153]:

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150 Dr Keesing wrote in his footnote:

> 'The MCI-sb is a soft bottom stream variation of the standard macroinvertebrate community index and is an accepted improvement to account for soft bottom stream differences. The MCI itself is a quality indicator based on the various sensitivities of the taxa present. The higher the index the more sensitive taxa are present and the better the quality of habitat.'

151 Dr Keesing's footnote:

> 'Diversity in this case is species richness and is relevant to typical average sampling catch statistics.'

152 As explained earlier, this is a simple record of the presence of mayfly, stonefly and caddisfly taxa.

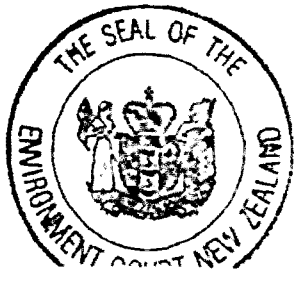
153 Dr V F Keesing, evidence-in-chief para 8.5 [Environment Court document 37].

> With regard to 'quality' indicators and system health, the scores derived for the MCI-sb (ie. Macroinvertebrate Community Index for Soft Bottom streams) metric ... show the following:
>
> (a) While the upper catchment has high scores (120+) indicating high quality assemblages with >5 EPT taxa, the lower reach of the main stem has an MC-sb range between 70 - 100, averaging 88, which is a poor to moderate score.
> (b) The north-eastern tributaries [1A to 1D] range from 62-100, but average out at 78 (a poor score).
> (c) The Glenvar tributary [9A] scored 72 (a poor score).
> (d) The largest two of the Awaruku tributaries[154] scored 80.5 (just above a poor score).
>
> The cut-off value under the MCI-sb index that corresponds to "very poor - severe organic pollution" is 80. There is therefore strong evidence to support a finding that all of the tributaries affected by the Landco SP proposal are currently in very poor health.

Based solely on existing macroinvertebrates and landuse, the experts agreed that the ecological values of Vaughans Stream catchment are as follows[155]:

(a) Upper catchment - high ecological values;
(b) Mid-catchment - low to high ecological values;
(c) Lower catchment - low to moderate ecological values.

[85] However, the experts wrote that they were not agreed about ecological values based on other attributes (e.g., fish, function, potential for restoration) that may be of equal or greater application to a structure plan which includes the Vaughans Stream catchment. While the ecological values can be reduced to separate parts (i.e. upper, middle and lower) of Vaughans Stream catchment (a reductionist approach), they also agreed it is appropriate to apply aquatic ecological values to an entire catchment (an holistic approach). We return to specific disagreements below.



154 Not given a stream number on Ex DK07.
155 Agreed Statement 13 "Freshwater Ecology" para 13 [Environment Court document 6/13].

1.55 How does Vaughans Stream compare district-wide? regionally? nationally?

[86] Vaughans Stream is the last remaining eastern-draining catchment within North Shore City which retains pastoral use and has not been urbanised[156]. So, comparing Vaughans Stream with others within North Shore City, we accept the evidence[157] of Dr Boothroyd and of Mr Heijs[158] that the aquatic values of the stream are very high amongst all North Shore streams. Further, Dr Boothroyd regarded the ecological values of Vaughans Stream as a whole as being of regional significance because:

(1) fish diversity is high in the catchment[159] - there are nine fish species compared with his benchmark of seven[160];

(2) there is at least one nationally threatened species - long-finned eel - in the catchment[161];

(3) there is existing and potential inanga spawning habitat[162] in the lower catchment.

[87] The next issue is whether a matter of national importance is raised by the facts. Because everyone agrees there are indigenous fauna in Vaughans Stream and Awaruku Stream this issue really transposes to the question: are these streams 'significant habitats' for that fauna under section 6(c) of the RMA? Dr Boothroyd wrote[163] that the ecological values of the whole of the Vaughans catchment have national significance. However, because he also described the lower Vaughans Streams tributaries 1 and 2 as having moderate-poor aquatic habitat values[164],the ecological witnesses for Landco, especially Dr Keesing, found it difficult to square Dr Boothroyd's two statements. Before we look at Vaughans Stream as a whole we consider the contentious tributaries individually.

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156 Dr I K G Boothroyd, evidence-in-chief para 4.29 [Environment Court document 11].
157 Dr I K G Boothroyd, evidence-in-chief para 4.27 [Environment Court document 11].
158 Mr J Heijs, evidence-in-chief paragraphs 4.11, 4.14 and 4.19 [Environment Court document 9].
159 Dr I K G Boothroyd, evidence-in-chief para 4.31 [Environment Court document 11].
160 Dr I K G Boothroyd, evidence-in-chief paras 4.31 and 4.32 [Environment Court document 11].
161 Dr I K G Boothroyd, evidence-in-chief para 4.33 [Environment Court document 11].
162 Dr I K G Boothroyd, evidence-in-chief para 4.34 [Environment Court document 11].
163 Dr I K G Boothoyd, evidence-in-chief para 8.1 [Environment Court document 11].
164 Dr I K G Boothroyd, evidence-in-chief para 4.17(d), also in Dr I K G Boothroyd, evidence-in-chief para 4.22 [Environment Court document 11].

Tributaries 1A to 1D (Vaughans Slopes)[165]

[88] Dr Keesing's opinion was that these tributaries had values as follows[166]:

Tributary reach identifier	Function / habitat value	Biological value	Conclusion
...			
1A and 1B (7.01 – 7.03)	Low	Low	Low
1B (7.04)	Moderate	Low-moderate	Moderate
1C (7.05)	Moderate	?	Moderate
1D (7.06)	Moderate	Moderate	Moderate

[89] Stream 1C is in Landco's proposed wedge-shaped reserve and so, on Landco's assessment, will not be affected by proposed urbanisation of the surrounding land. Dr Keesing acknowledged that streams 1A to 1D could generate organic matter as food, including invertebrates as food for fish[167], but pointed out that they supply their[168] "minor (at best) contributions of indigenous organic matter to the estuarine part of the Vaughan's Stream main stem". He wrote that[169] "This is an important point in my opinion and one that the NSCC evidence fails to acknowledge". The relative lack of importance of lower catchment streams such as streams 1 and 2 was confirmed by the ARC witness Dr Parkyn when she wrote[170]:

> The headwater streams at the top and middle of the catchment of Vaughan's stream are likely to be of more importance in terms of their functional role for the ecology of Vaughan's stream than those in the lower catchment, simply because of the point at which they flow into the main stem. Those in the lower part of the catchment (the section known as [Vaughan's Slopes (North)] and Vaughan's flats with streams that flow into the main stem above the tidally influenced reach) are less likely to have functional influence on the downstream reaches because the stream length of the main stem that they influence is shorter (except when earthworks or other damage makes them a source of sediment). The loss of these latter streams would mainly result in a loss of habitat for aquatic and terrestrial species, and the loss of potential for improved habitat.

165 Dr V F Keesing's streams 7.01, 7.04, 7.05, 7.06.
166 Dr V F Keesing, evidence-in-chief para 10.1 and Table 3 [Environment Court document 37].
167 Dr V F Keesing, evidence-in-chief para 11.33 [Environment Court document 37].
168 Dr V F Keesing, evidence-in-chief para 11.30 [Environment Court document 37].
169 Dr V F Keesing, evidence-in-chief para 11.30 [Environment Court document 37].
170 Dr S M Parkyn, evidence-in-chief para 4.8 [Environment Court document 49].

[90] Dr Boothroyd described Tributary 1 as follows[171]:

> Tributary 1 drains a grazed pasture subcatchment, which has resulted in significant habitat and riparian vegetation modification. An exception is the headwater reaches of the eastern branch that drains a small native bush gully remnant. Eels, banded kokopu and at least one EPT taxa has been recorded from Tributary 1. Permanent pools are present during the critical period.

Dr Keesing compared the ecological values of tributaries 1A to 1D with those of the mainstream as follows[172]:

> Clearly the Vaughan's Stream main stem (in the upper and middle reaches) holds the significant habitat, diversity and biomass with regard to EPT taxa while the affected tributaries hold no 'refuge' populations and indeed barely support any EPT representation whatsoever. The affected tributaries cannot be considered a 'source' of colonists or a sink for dispersing individuals, and in my opinion they have no critical (nor even marginally important) biodiversity functional role in the context of the wider Long Bay catchment.

Dr Keesing did not consider the importance of stream 1 and its tributaries in respect of fish, e.g. long-finned eels, nor its potential for rehabilitation.

Tributary 2 (Awaruku Ridge - north side)[173]

[91] Dr Donovan considered only the lower reaches of the stream - where, from our observation, it runs as a straight drain across the flats to Vaughans Stream - to be a significant habitat[174], presumably as a breeding area for inanga, as Dr Boothroyd confirmed[175].

Tributary 3 (Glenvar Primary Schoo1)[176]

[92] Dr Keesing considered[177] the streams have moderate 'functional/habitat' value and low-moderate biological value. Dr Boothroyd wrote[178]:

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171 Dr I K G Boothroyd, evidence-in-chief para 4.22 [Environment Court document 11].
172 Dr V F Keesing, evidence-in-chief para 11.13 [Environment Court document 37].
173 Dr V F Keesing's stream 5.01.
174 Dr W F Donovan, evidence-in-chief para 5.27 [Environment Court document 30].
175 Dr I K G Boothroyd, evidence-in-chief para 3.10 [Environment Court document 11].
176 Dr V F Keesing's streams 4.01 and 4.03.
177 Dr V F Keesing, evidence-in-chief para 10.1 and Table 3 [Environment Court document 37].
178 Dr I K G Boothroyd, evidence-in-chief para 4.23 [Environment Court document 11].

> Tributary 3 can be divided into three reaches, 1) an upper headwater reach draining native bush, 2) a piped mid-reach, and 3) a lower reach draining low gradient swamp. The upper headwater reaches are of high value and support large numbers of banded kokopu and koura as well as EPT.

Tributary 4 (Vaughans Stream 4: True-left bank)

[93] Dr Boothroyd describes[179] this tributary as having riparian vegetation and moderate to high ecological values due to that vegetation, 'high numbers' of banded kokopu and the presence of EPT taxa.

Tributaries 9A, 9B, 9C (Glenvar Ridge north face)[180]

[94] Dr Keesing considered[181] that the first 100 metres of tributary 9A[182] above its junction with the mainstream has moderate 'function/habitat' value, and low biological value. Later[183] he discusses tributaries 9A, 9B and 9C[184], stating:

> With the exception of the lower portions of [9A] (which will be reserved under the Landco SP proposal), none of these tributaries has a riparian zone in native vegetation, no fish have been recorded in them, none support any EPT taxa and their MCI-sb scores indicate poor conditions. Hence, even though these three tributaries are within the mid-reaches of the Vaughan's Stream main stem, their contribution to the ecological functionality of the wider freshwater system is negligible.

[95] Dr Boothroyd wrote[185]:

> Tributary 9[A] drains into the true-right side of the upper Vaughans Stream. The lower reaches drain an area of steep sloping land covered in native bush, whilst the upper reaches are in grazed pasture. Stream habitat abundance is limited by the low quantity of surface water, with highest value habitat occurring in the lower reaches. Koura are recorded from the lower reaches of Tributary 9[A].

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179 Dr I K G Boothroyd, evidence-in-chief para 4.24 [Environment Court document 11].
180 Dr V F Keesing's stream 2.02.
181 Dr V F Keesing, evidence-in-chief para 10.1 and Table 3 [Environment Court document 37].
182 Dr V F Keesing's streams 2.02, 2.01 and 3.05.
183 Dr V F Keesing, evidence-in-chief para 15.4 [Environment Court document 37].
184 Dr V F Keesing's tributaries 2.02, 2.01 and 3.05.
185 Dr I K G Boothroyd, evidence-in-chief para 4.25 [Environment Court document 11].

Dr Boothroyd said little[186] about tributaries 9B and 9C (both downstream of tributary 9A).

Vaughans Stream as a whole

[96] A key issue is whether Vaughans Stream is, or parts of it are, a significant habitat(s) for the purposes of section 6(c) of the RMA. In their reply the NSCC's counsel, Dr Somerville and Mr McNamara, criticised Dr Keesing on four grounds[187]:

> ... failure to consider fully the presence and importance of fish, the ecological function of tributaries, the potential for restoration, and the importance of the Vaughans Stream catchment as a whole.

We agree that Dr Keesing's position on the value of the tributaries of Vaughans Stream for fish is difficult to understand and was summarised fairly, by counsel for the NSCC, when they wrote[188]:

> Despite accepting the role ephemeral streams in these areas played as a fish habitat, and not denying the findings made by Dr Boothroyd as set out in his evidence in chief, Dr Keesing nevertheless denied[189] that the streams numbered 1, 3, 4, 5 and 9 ... (which are located on the Vaughan's slopes and in Glenvar) had *value* as a fish habitat.

[97] Similarly as to function, Dr Keesing agreed[190] with Dr Parkyn's evidence about the importance of headwaters on downstream waters. He also confirmed that connectivity of streams is important under cross-examination by Ms Campbell for the ARC[191] and by Mr McNamara[192] for the NSCC. Despite that he was not prepared to concede any functional value in the headwaters of stream 1, i.e. streams 1A to 1D.

[98] Further, the potential for restoration of degraded tributaries and reaches should be considered under section 5(2)(c) of the RMA - 'remedying ... adverse effects' - and

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186 His Annexure IB08 contains photographs of them.
187 NSCC Reply 12 November 2007 para 14.10 [Environment Court document 88].
188 NSCC Reply 12 November 2007 para 14.14 [Environment Court document 88].
189 Transcript p. 1198 lines 14-30.
190 Transcript p. 1186.
191 Transcript p. 1186 line 32 to p. 1187 line 1.
192 Transcript p. 1195 at lines 7-8.

section 7(f) - '... enhancement of the environment ...'. On this issue Dr Keesing wrote[193]:

> Where the ecological values of streams are low and the effects of their loss not significant then there should be no issues relating to their removal.

He agreed in cross-examination[194] by Ms Campbell for the ARC that one of the differences between him and Dr Parkyn is that he did not take restorative potential into account. We return to that issue later when making predictions. Other identified differences between him and Drs Parkyn and Boothroyd were his relative lack of evidence on the fish ecology (because he saw this as a main stem issue on which Dr Donovan gave evidence) and the related issue of looking at the Vaughans Stream catchment as a whole.

Awaruku Stream and its tributaries[195]

[129] This is poor quality habitat with small numbers of fish[196]. We find, based on Dr Donovan's evidence, that[197] "... the Awaruku Stream does not compare favourably with others district-wide, regionally, nationally but it's not without freshwater ecological values".

1.56 Conclusions - Freshwater ecology

[100] In relation to the Landco structure plan and the evidence of the witnesses in favour of it we consider there is some strength in Dr Somerville's and Mr McNamara's submission[198] that:

> Landco's overall approach may be characterised as one of excluding from consideration matters that might otherwise result in particular streams being accorded value ...

193 Dr V F Keesing, evidence-in-chief para 6.7 [Environment Court document 37].
194 Transcript p. 1188 lines 26-37.
195 Dr V F Keesing's streams 11.02, 11.03, 11.04.
196 Dr V F Keesing, evidence-in-chief Table 1 [Environment Court document 37]; Dr W F Donovan, evidence-in-chief para 5.29 [Environment Court document 38].
197 Dr W F Donovan, evidence-in-chief para 3.1 [Environment Court document 38].
198 NSCC Submissions in reply, 12 November 2007 para 14.15 [Environment Court document 88].

We consider the presence of threatened or locally uncommon fish species (long-finned eel and inanga) is a matter that goes towards significance under section 6(c) of the RMA, as are the functioning of all the tributaries of Vaughans Stream, and the potential of degraded tributaries for restoration. We agree that Landco's approach of dividing consideration of the main stem and perennial tributaries from intermittently flowing tributaries and having different witnesses deal with each (Dr Donovan and Dr Keesing respectively) increases the difficulty of looking at the catchment as a whole.

[101] We find that on the preponderance of the evidence:

1. Vaughans Stream supports both long-finned eels which are a threatened species, and inanga, koura and EPT species which are all locally uncommon (i.e. North Shore City);
2. the drain section of stream 2 is an important breeding habitat for inanga;
3. because the mid reaches of Vaughans Stream connect the upper and lower reaches, maintenance of natural flows is very important in ecological terms;
4. there are a number of significant bush remnants which include streams, e.g. on streams 1C, 4 and 9A;
5. all the tributaries (except 0, 1 and 2 and the piped sections of streams 3A and 3B) and their headwaters play an important function in collecting and filtering the water that flows into Vaughans Stream;
6. stream 1B provides connectivity between streams 1C, 1D and the estuary;
7. Subject to 8:
   (a) all tributaries remain viable to a greater or lesser extent as habitat for fish and insects; and as functioning parts of the catchment ecosystem;
   (b) all the tributaries of Vaughans Stream have potential for enhancement;
8. the Vaughans Flats contain a degraded wetland which is, because of its rarity, important to connectivity between the stream and marine ecosystems. It is also important as habitat to inanga, eels and other fish species, a significant habitat for indigenous fauna within the meaning of section 6(c) of the RMA.

1.6 Stormwater and erosion

[102] Under the existing land uses of the LBSP area sediment is washed into and down Vaughans Stream and Awaruku Stream into Long Bay. The average sediment yields for those land uses in the area are[199]:

670 kg/ha for pasture
300 kg/ha for urban

Those figures show that, at least from the point of view of minimising sediment production, urban use of the Long Bay SP area is preferable to pasture.

[103] There appeared to be agreement that if the structure plan area was developed as in either of the structure plans then ultimately the annual average sediment discharge would be less than now. The contentious issue between the parties was about the possibility of increased sediment during earthworks for urban development. Since that is an issue of prediction we leave it to part 3.0 of this decision.

1.7 Marine ecosystems

[104] We read and heard evidence of five experts in the general field of marine ecology:

Mr S Kelly (for NSCC)
Mr P A Hartley (for NSCC)
Dr M Larcombe (for Landco)
Dr S De Luca-Abbott (for Landco)
Dr S Thrush (for the ARC).

In a joint statement by the first four[200] they recorded their agreement that:

- marine communities within Long Bay are adequately documented;
- Long Bay's marine reserve status provides an opportunity for marine environment to return to a more natural state;

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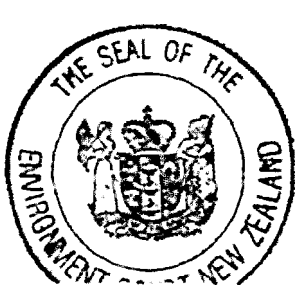
199 Dr M Larcombe, evidence-in-chief para 5.10 [Environment Court document 33].
200 Environment Court Document 6.



- as Long Bay is a marine reserve, activities should be more controlled/scrutinised;
- Long Bay is important because it contains a mix of inner and outer gulf species;
- it is important to consider the proportion of the marine environment in reserves;
- the marine ecological values of Vaughan's and Awaruku estuaries are unlikely to be particularly high, but they provide a link to the freshwater system;
- suspended sediment and sedimentation can have potential effects on the Long Bay marine environment;
- there are some species present in Long Bay that have been documented by NIWA to be sensitive to suspended sediment and sedimentation in lab and in field trials (although studies have not been specifically carried out in Long Bay);
- there are species present in Long Bay that are potentially sensitive to urban contaminants and sedimentation (at different levels of contaminants, sedimentation and suspended sediment);
- the amount of sediment likely to enter the receiving environment under the various development scenarios is not yet known;
- there is a need to compare current catchent sediment yields and yields from both development scenarios;
- the NIWA hydrodynamic model currently estimates the potential for sediment dispersal, but it is based on various assumptions, and there are various interpretations of the outputs;
- sediment can be transported across the reefs under certain conditions.

1.8 The coastal environment

[105] Landscape experts Mr P Rough (for Landco), Mr S Brown (for NSCC), Mr B Coombs (for the ARC) and Ms D Lucas (for the Long Bay Society) agreed[201] that the entire Long Bay structure plan area is within the 'coastal environment'. That is an important agreed finding because it entails first that there is a matter of national importance involved under section 6(a) of the RMA, and secondly that the New Zealand Coastal Policy Statement also has to be given effect to[202].

[106] We discuss the 'natural character' of that part of the coastal environment which is the LBSP area in Part 1.10 below in relation to landscape.

201 Landscape experts' joint statement 8 June 2007 para 4.4.1 [Environment Court document 6/1].
202 Section 75(3) of the RMA.

1.9 The history of Long Bay (Te Oneroa o Kahu)

1.91 The historic heritage

[107] We read evidence from these heritage professionals:

Dr C Phillips, archaeologist (for Landco)
Mr M Campbell (for The Long Bay Okura Great Park Society)
Mr D Nugent (for Auckland Regional Council)
Mr R McGovern-Wilson (for New Zealand Historic Places Trust)
Mr R Foster (for North Shore City Council)
Mrs L Vyfhuis (for North Shore City Council).

[108] A useful set of maps had been prepared by Geometria Limited and was produced by Dr Phillips. The maps show[203] 19 pre-European Maori archaeological sites and seven 19th and 20th century archaeological sites recorded in the New Zealand Archaeological Association site recording file as being within the Long Bay Structure Plan Area. Most pre-European Maori sites are located either along Vaughans Stream near the eastern end of Awaruku Ridge, or the Vaughans Slopes (South). Some are observable on the ground, others were detected by geophysical investigation and subsequently checked on the ground. The experts described the set of archaeological features on the Awaruku Ridge and Headland as:

> Constitut[ing] a contiguous landscape of occupation and use ... This landscape is not restricted to pre-European Maori occupation. Integral to the landscape is Alexander Pannill's house site (R10/1139) and the ditch and bank fences (R10/1098) thought to be associated with the Pannill family occupation, as well as the World War II pill-box (R10/1083).
>
> Within the Structure Plan Area there are spatial patterns representing a range of activities, both through time and across space. This landscape represents three significant periods in the history of Aotearoa/New Zealand: pre-European Maori occupation; the early colonial and settler occupation of the 19th century, and 20th century occupation including occupation related to World War II.

203 Agreed statement 29 June 2007 [Environment Court document 6/10].

Pannill's House site and the World War II pill box are outside the LBSPA, on land now owned by the ARC.

[109] The sites on the Awaruku headland disclose[204] that the Maori inhabitants occupied the natural terraces on it intermittently over a period of 350 years, from AD 1450-1800. The experts agreed[205]:

> As the physical landscape at Long Bay is relatively intact the Maori sites on the headland are in good condition, and their context can be determined within the local physical landscape and in relation to other sites along Vaughans Stream and beside the stream mouth.
>
> The Maori sites along Vaughans Stream have been less well studied, but although there have been recent native tree plantings along the stream, it is likely that the sites themselves are reasonably intact, and have good contextual values, good information potential and educational values.
>
> Although Maori midden sites themselves are not rare locally or regionally, their groupings in these locations are. Midden contents reflect the local environment of the time of occupation and so are unique to each locality. Clearly, Maori occupation during this period left a light footprint on the land, with patches of shell buried beneath the topsoil being the main component.
>
> The pre-European Maori landscape at Long Bay also stands out as significantly different from superficially similar sites. It differs from the nearby landscape at Weiti, for instance, in that the latter is a horticultural landscape implying semi-permanent occupation while the evidence at the Long Bay headland landscape implies repeated short-term, transient occupation over a long time period. The two landscapes are complementary.

[110] As for the 19th century history of the land, the experts agreed[206]:

> Extractive industries, common throughout New Zealand during the nineteenth century, are represented in Long Bay by gum digging, which has resulted in a relatively light impact on the environment. Gum digging during the nineteenth century is well-known historically, but few sites have been recorded that relate to this activity, especially in North Shore City. Two sites

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204 Archaeological and heritage experts' agreed statement (29 June 2007) page 3 [Environment Court document 6/10].

205 Archaeological and heritage experts' agreed statement (29 June 2007) page 3 [Environment Court document 6/10].

206 Archaeological and heritage experts' agreed statement (29 June 2007) pages 34 [Environment Court document 6/10].

along Vaughans Stream together with gum digging holes found during the *Historic Places Act* section 18 investigation, present a full picture of this endeavour ...

Farming has made a longer-lasting impression on the environment with the clearing of scrub, fern and patches of forest and their replacement with grasses, crops and exotic shelter belts. The principal evidence of nineteenth century farming at Long Bay is the system of ditch and bank fences, thought to be constructed by, or for, Alexander Pannnill during the 1860s. These structures provide a rare insight into a nineteenth century farm layout, showing how the farm was divided into a series of paddocks, with smaller ones closer to the farmstead.

[111] Their comment on the 20th Century was[207]:

The World War II defensive structures that are located along the coastal cliffs and shore of Long Bay are an important part of the more recent history of New Zealand. The most notable feature relating to this period along the coastal cliffs at Long Bay are the pill boxes.

[112] The experts concluded that[208]:

The layering of occupation on the headland makes this cultural landscape highly significant and this derives from its integrity as an intact and historically layered landscape, where the whole is very much greater than the sum of its parts. The layering in one place of:

- pre-European Maori occupation (from an early date);
- the 19th century settler occupation (representing the interaction of Maori and pakeha and of changing patterns of ownership and occupation); and
- the World War II gun emplacement (again, representing a crucial point in New Zealand history)

- may be in many ways unique in New Zealand. I[t] is highly significant at district, regional and national levels.

That is an important, agreed, conclusion on which we should place considerable weight.

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207 Archaeological and heritage experts' agreed statement (29 June 2007) page 4 [Environment Court document 6/10].

208 Archaeological and heritage experts' agreed statement (29 June 2007) page 4 [Environment Court document 6/10].

1.92 Tangata whenua values

[113] The District Plan[209], and all witnesses, recognise that there are three iwi with status as tangata whenua:

- Ngati Whatua;
- Ngati Paoa;
- Te Kawerau a Maki.

Of those only one group, Ngati Whatua Nga Rima o Kaipara ('Nga Rima") - which affiliates to Ngati Whatua - was a party to the appeals. However, we read and heard the evidence of a representative of Te Kawerau a Maki also - called by the ARC.

Ngati Whatua

[114] We did not hear or read evidence on behalf of Ngati Whatua as an iwi. Instead we read evidence from the kaiarataki (loosely, "CEO") of Nga Rima - Ms J Sherard. She stated that Nga Rima approves the Landco proposal for the Awaruku headland which involves setting aside a representative sample of the heritage sites, burying the remainder so that they are safe, the setting aside of a 'reserve contribution', and building an educational centre at or near the foot of the coastal scarp (in the location of the existing cottages).

[115] We found the evidence of Ms Sherard rather elusive. First it contained a lengthy and mostly irrelevant description of organisations and meetings related to Ngati Whatua. Then the main reason for Nga Rima's support for the Landco SP appears to be in this passage[210] (which gives the flavour of Ms Sherard's style):

> In no way should 'seasonal pa' be negated in terms of the protective measures put toward it. The context of the whenua headlands, in its entirety, on the eastern coast needs an improved measure of protection, both restorative and management.
>
> It is noted that both the LCSP and NSCCSP proposals state through their respective conceptual evidences that a percentage of the South-East whenua headlands can be preserved. For this

209 Chapter 7 para 7.1 [NSCC District Plan Vol. 1 p. 7-1]
210 Ms J Sherard, evidence-in-chief p. 11 (Environment Court document 77].

> reason, Ngati Whatua Nga Rima o Kaipara has looked at the longevity of Kaitiakitanga and manaakitanga in terms of ensuring that knowledge of the archaeological and cultural heritage is assured into the future.
>
> ***For this reason (and others mentioned elsewhere in the evidence), the Landco Limited Structure Plan is our preferred structure plan proposal.***
>
> To that effect, there are clear differences in the percentage levels of the area coverage, certainty and protection given to the sites. Therefore, in relation to the above-mentioned, NWNRoK prioritised that ***protection given in perpetuity by the LCSP should be given our support*** rather than that of NSCCSP Long Bay 7 Heritage Protection Zone which allows for subdivision and development through an 'exception to the rule' based on considering Structure Plan principles of the Operative District Plan.

[116] When she was cross-examined by Ms Campbell for the ARC about proposals of its witness Mr Nugent for the protection of the headland, this passage ensued[211]:

Ms Campbell:	So Mr Nugent's HPA would provide better protection from disturbance for the archaeological - the physical archaeological remains?
Ms Sherard:	Correct, but again however not quite in the manner that we had envisaged. There is the physical remains and there is the longevity in people's memories' remains.
Ms Campbell:	And by that are you referring to the interpretative or cultural heritage centre that the Landco plan provides for?
Ms Sherard:	Not entirely.

Neither there nor anywhere else did Ms Sherard state precisely why the Awaruku headland was of significance to Nga Rima. We gained the impression it was more out of general respect for waahi tapu than for specific historic reasons. Finally we note that at the earlier hearing (16 November 2005) before Commissioners for the NSCC Ms Sherard produced a submission supporting other interested persons, Ms Pamera Warner and a trust called Te Tinana o Ngati Whatua. Ms Sherard's evidence to us seems to be inconsistent with her earlier position.

[211] Transcript p. 1819.

[117] In fact Ms Warner gave evidence to us for the Okura Environmental Group on behalf of 'Te Tinana O Ngati Whatua'. She explained that is a charitable trust[212] representing 'the seven traditional regions of the Rohe o Ngati Whatua and is the overall representative group'[213]. Ms Warner stated[214] she personally was a member of Ngati Rongo. That is a hapu 'associated with' one of the five marae represented by Nga Rima[215] although, as Ms Sherard had earlier acknowledged[216], each marae retains the autonomy to speak on matters affecting it. Ms Warner advised that Te Tinana's preference is for a larger historic zone with no development allowed in it. Ms Warner informed us that she was descended from Maki under 'Te Kawerau a Maki' - see below - and that he and her other tupuna had left footprints on the sand of te whenua roa o Kahu (Long Bay).

Ngati Paoa

[118] Ngati Paoa was neither a party, nor had a representative give evidence. We had rather conflicting evidence as to its position:

- Mr Oliver produced[217] a letter of support; but
- Ms Vyfhuis produced[218] a later letter qualifying Ngati Paoa's acceptance.

We do not give its (irreconcilable) views any weight.

Te Kawerau a Maki

[119] Te Kawerau a Maki was not a party to the appeal. Nor had it an earlier involvement in either these or the earlier proceedings about the future of Long Bay. Despite that at the hearing Mr S B Roberts appeared to give evidence on behalf of Te Kawerau for the ARC. Landco was obviously very concerned at this late development. Counsel referred to *Canterbury Regional Council v Waimakariri District Counci1*[219] ("the Pegasus Town case") where the Environment Court wrote:

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212 Registered 17 July 1992.
213 Ms P Warner, rebuttal evidence para 2 [Environment Court document 70].
214 Ms P Warner, rebuttal evidence para 1.0 [Environment Court document 70].
215 Ms J Sherard, evidence-in-chief para 2 [Environment Court document 77].
216 Ms J Sherard, evidence-in-chief para 2 [Environment Court document 77].
217 Mr G Olliver, evidence-in-chief appendix 5 [Environment Court document 22].
218 Ms L Vyfhuis, rebuttal evidence appendix 2 (last page) [Environment Court document 14].
219 C5/2002 at para [74].

> It would be a travesty of justice at this late stage of proceedings in respect of development proposals which have been extant for many years to arbitrarily halt any further consideration of development as a result of Maori concerns which did not finally become apparent until the Reverend Gray drew his diagrams upon a whiteboard in Court. We also consider it totally inappropriate at this late stage to halt those proceedings and essentially accept a veto now lodged by a small but sincere group of Maori.

We observe that these proceedings are distinguishable from the Pegasus Town case first because we do not understand Mr Roberts to be suggesting all development be stopped - although he certainly wished to debar urbanisation of a large part of the Awaruku headland and the Awaruku Ridge running almost all the way back to Long Bay College. Secondly no party is here suggesting that there is a lack of consultation, let alone that any such failure should cause a 'veto' of proceedings.

[120] As for consultation, superficially the consultation undertaken by Landco appears to have been reasonably thorough and sincere. However, for Te Kawerau a Maki Mr Roberts did not, if we understood him correctly, accept[220] that proper representatives of Te Kawerau were consulted. That is not a negligible point: if a limited liability company was to be consulted would it suffice to talk to a shareholder? However, since no party appealed on the grounds of lack of consultation by the Council or the Crown, we make no findings as to the adequacy of any consultation by them. The important issue here is that Te Kawerau a Maki is not debarred from having an authorised representative give evidence in these proceedings. We turn to the substance of the evidence.

[121] Mr Roberts explained how the names of both his iwi and of Long Bay are linked to the history of the area[221]:

> In the early to mid 1600s, our eponymous ancestor Maki migrated with a large group of followers from Kawhia ...

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220 Transcript p. 1594.

221 Mr S B Roberts, evidence-in-chief para 4.4 *et ff* [Environment Court document 56].

> [They fought a] battle ... at the southern end of Te Oneroa o Kahu (Long Bay). This battle is known in Te Kawerau A Maki tradition as 'Whakarewatoto'. This name came to apply to the southern end of the Long Bay beach and to the kainga that was located on the headland above ...
>
> Following the battle of Whakarewatoto, Maki and his ... followers [settled] in the area. As part of the peace settlement following the battle, Maki's younger brother Mataahu married a local chiefly Ngaoho woman known as Te Kura. It is from her that the Okura area adjoining Long Bay to the north takes its name, 'the dwelling place of Kura'.

[122] Maki's grandson was Kahu who lived on the North Shore. Mr Roberts wrote of Kahu[222]:

> It is of immense significance to us that it is from this tupuna that both Te Whenuaroa O Kahu - 'the extensive lands of Kahu' (North Shore) and Te Oneroa O Kahu - 'the long sandy beach of Kahu' (Long Bay) take their name. From Kahu descended Marukiterangi who lived at Te Oneroa o Kahu (Long Bay) around the beginning of the seventeenth century. Marukiterangi married Tawhiakiterangi who was also known as Te Kawerau A Maki. We are the direct descendants of these ancestors [i.e. Maki and Kahu].

[123] In relation to the Awaruku ridge and terminating headland Mr Roberts wrote[223]:

> Archaeologists have recorded this ancestral occupation area on the southern headland as a number of separate sites, but Te Kawerau A Maki see the area as one large kainga, or settlement, that has been occupied over many centuries. The archaeological evidence shows 'burning events' or cooking and house fires occurring throughout this area. This is of immense significance to us as it is from these fires that the term 'kainga' (kaa - inga) comes. In traditional Maori terms a fundamental basis for mana whenua was 'ahi kaa roa' or the long burning fire.
>
> This ancestral landscape within the Long Bay Structure Plan area, which has been recently more clearly defined by archaeological research and investigation is of immense significance to Te Kawerau A Maki. **It is the last such landscape left within Te Whenuaroa o Kahu (the North Shore) that is directly associated with our tupuna Kahu and Marukiterangi, and which has not been highly modified or destroyed by development.**
> [Our emphasis]

222 Mr S B Roberts, evidence-in-chief para 4.8 [Environment Court document 56].
223 Mr S B Roberts, evidence-in-chief para 5.3 *et ff* [Environment Court document 56].

Mr Roberts' evidence was not contradicted by any witness so we accept it. We discuss its significance later.

1.10 The Landscape

1.10.1 The agreed evidence on landscape

[124] We read the evidence and heard cross-examination of five landscape architects. The four primarily involved in the proceeding were Mr S K Brown, Mr P Rough, Ms D J Lucas, and Mr B T Coombs. In addition we read the evidence and heard cross-examination of two other relevant witnesses. Mr F Boffa, a very senior and experienced landscape architect, was called for Landco to review the evidence of Mr Rough and others, but was not involved in the experts' caucusing. Mr N W Olsen, the Senior Recreation Advisor for the ARC, gave evidence about the potential impacts of the structure plans on the Long Bay Regional Park. Mr Olsen has degrees in both architecture and planning so we accept his expertise to express opinions about those impacts.

[125] Perhaps because of the subjectivity of opinions about landscape, the experts could not agree on very much. Their joint statement records[224] as many disagreements as agreements and some of the agreements are often so carefully qualified we are not sure what was agreed. Their agreements about the values of the LBSP area were:

- that the entire Long Bay catchment and structure plan area is within the coastal environment[225] (as we have already recorded);
- that the values of the natural features of the LBSP area are as identified in the *North Shore City Significant Landscape Features Study* [1998/2002] "accepting [sic] some concern voiced about the adverse effects of recent housing development on the Vaughans Road Ridge"[226];
- that existing values potentially affected by development within the structure plan area include:

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224 Agreed Statement 8 June 2007 [Environment Court document 6/1].
225 Agreed Statement 8 June 2007 para 4.4.1 [Environment Court document 6/1].
225 Agreed Statement 8 June 2007 para 5.3.1 [Environment Court document 6/1].

- natural character
- rural character
- water/marine quality
- coastal/beach character
- heritage character (Vaughans Homestead, WWII bunkers etc)
- residential public domain and Regional Park outlook/views
- sense of place (covering a range of experiential dimensions)[227];

- that future amenity values that need to be addressed relate to the character and qualities of future urban and peri-urban environments foreseeable under the NSCC and Landco's structure plan[228]; and
- that the "archaeological landscape" near Long Bay Regional Park has values 'worthy of recognition'[229].

[126] Since one of the concerns of both the Society and of the OEG is about the visibility of proposed urban development in the LBSP area, it is relevant that the experts also agreed[230] that most of the structure plan area is visible from parts of Long Bay Regional Park, including most of the lower Vaughans Flats; and that issues concerning the Regional Park's visual catchment/backdrop mainly relate to publicly used areas of the park. Further, those public areas may change, for example, with greater use of the Vaughans Flats area and/or development of a new park entrance above Pohutukawa Bay (as in the ARC's Long Bay Regional Park Concept Plan and NSCC proposals for Long Bay Reserve)[231].

227 Agreed Statement 8 June 2007 para 4.5.1 [Environment Court document 6/1].
228 Agreed Statement 8 June 2007 para 4.5.2 [Environment Court document 6/1].
229 Agreed Statement 8 June 2007 para 4.3.2 [Environment Court document 6/1].
230 Agreed Statement 8 June 2007 page 4.6 [Environment Court document 6/1].
231 Agreed Statement 8 June 2007 page 4.6 [Environment Court document 6/1].

1.10.2 Significant landscape features within the LBSP area

[127] As stated earlier, the four caucusing landscape architects all agreed that the relevant features identified in the *North Shore City Significant Landscape Features Study*[232] have the 'significance'[233] stated there. That study identifies the following levels of significance for each of these 'units' by which we understand the *Study* to mean 'features'. We identify each feature by the name we have given it for the purpose of this decision:

(1) Awaruku Stream[234]: 'Significant'. Its key attributes included:

- Its sinuous profile contrasting with the rough pasture that flanks it
- Its freedom from significant disruption & development

(2) Awaruku Ridge[235]: 'Significant'. The study states that this:

> ... prominent ridgeline ... encompass[es] pastoral slopes that still convey a strong rural / natural character without significant encroachment from residential development.

(3) Vaughans Flats[236]: 'Significant'. Its key attributes are described as:

- Its sinuous profile [again] contrasting with the open pasture either side
- Its freedom from significant disruption & development
- Its focal nature in the centre of the valley system

(4) Homestead Spur[237]: 'Outstanding'. Its key attributes are described as:

- The escarpment's very strong physical relief
- Its resultant sense of containment & focal character
- The physical extent, continuity & cohesion of vegetation cover - including its freedom from encroachment by development

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232 Mr S K Brown, evidence-in-chief para 3.40 [Environment Court document 5].

233 From the *North Shore City Significant Landscape Features Study* attached to Mr S K Brown's landscape evidence (Statement of Visual Evidence) as attachment SB(L)00. [Environment Court document 5A].

234 [NSCC] unit No: 107.

235 [NSCC] Unit No: 106.

236 [NSCC] Unit No: 104.

237 [NSCC] Unit No: 103.

- The maturity and endemic 'signature' value of much of that cover
- The forest's articulation & reinforcement of the topography
- Its visual contrast & interplay with nearby pasture
- Its interplay with Vaughans Stream

(5) The Piripiri Point Ridge[238]: 'Highly Significant'. Its key attributes are described as:

- Strong topographic relief
- Predominantly natural /rural skyline character

[128] Two of the streams on the Vaughans Slopes (North) - Stream 1C and 4 - are identified[239] as 'significant' and 'highly significant' because they contain pockets of remnant/regenerating forest. Also one stream - stream 3 - on Glenvar Slopes[240] contains '[a] pocket of rewarewa, puriri, kahikatea forest west of Long Bay Primary School' which is 'highly significant'.

[129] Immediately to the east of the LBSP area is the coast of Hauraki Gulf. The coast[241] from Piripiri Point to Vaughans Stream is described in the *North Shore City Significant Landscape Features Study* as 'outstanding' because of its key attributes:

- The focal nature of the coastal interface & in particular the headland off Piripiri Point
- The strong natural values associated with the sea, beaches, reefs, cliffs, coastal ridge & pohutukawas
- The strong definition afforded by emphatic landforms & (more sporadically) by pohutukawas
- The lack of encroachment by development into the coastal environment & margins
- The strong contrast between this edge & adjacent pasture & rural-residential development

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238 [NSCC] Unit No: 100.
239 [NSCC] Units 102 and 101.
240 [NSCC] Unit No: 112.
241 [NSCC] Unit No: 99.

[130] Continuing south along the Long Bay Beach - again outside the structure plan area - the Long Bay Beach from Vaughans Stream to Awaruku Stream is also described[242] in the same document as 'outstanding' with its key attributes described as:

- The beach's linear profile & extensive foreshore
- The interplay of the beach front & surf
- Framing by dunes, trees & a large, protective backshore area - protecting much of the beachfront from significant development
- The overall continuity & linkage with related natural features - Vaughans Creek & escarpment, the northern cliffs, etc.

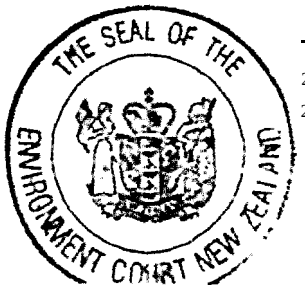
[131] While we agree with the descriptions in the *North Shore City Significant Landscape Features Study*, we draw attention to the fact that the study is about units - which are much too small to be landscapes so they are properly classified in the language of the RMA as features. That is relevant because it was the case for the Long Bay Society that the landscape witnesses, other than their witness Ms Lucas, had not identified whether or not the Long Bay structure plan area is an 'outstanding natural landscape' within the meaning of section 6(b) of the RMA, or part of such a landscape.

1.10.3 Section 6(b): Outstanding Natural Landscapes

[132] It was recognised by most of the landscape experts (Mr Rough excepted) that part of Hauraki Gulf - roughly coinciding with the Long Bay Marine Reserve - and the adjacent coastline (to the cliff-tops) from Vaughans Stream to Piripiri Point is an outstanding natural landscape within the meaning of section 6(b) of the RMA. However, the Society argued, or at least its witness Ms Lucas did, that a greater area is an outstanding natural landscape.

What is a 'natural' landscape?

[133] Referring to a 'natural landscape' has been described as an oxymoron[243] to be avoided. Over most of the Earth's continents that may be true. However, while New



242 [NSCC] Unit No: 105.
243 Dr G Park Theatre Country (VUP, 2006) p. 9.

Zealand has many myths about its clean, green countryside, it may not be too much of an exaggeration to claim that some of its really remote back country is nearly pristine ('nearly' because one still needs to discount introduced pests and weeds, cut tracks and the occasional hut). In any event we cannot avoid the issue because the RMA expressly refers[244] to 'outstanding natural features and landscapes'.

[134] Mr Brown usefully referred to studies[245] which he claimed 'provide a verifiable foundation for the identification of outstanding natural features and landscape across the Region'. He continued[246]:

> That research, in common with a series of earlier studies dating back to 1998, clearly indicates that landscape attributes and values are typically defined by two key factors:
>
> (a) The degree of naturalness and endemic character of a locality - related to its sense of place, both as part of New Zealand and as a distinctive location within this country; and
> (b) The visual structuring and patterning of the landscape - its compositional character that, in turn, affects the degree of visual coherence, diversity and stimulation / excitement elicited by the landscape in two dimensions and three dimensions.
>
> The level of naturalness and concomitant perception of the degree to which a landscape is developed or modified, has been identified by Professor Swaffield and Mr Fairweather as critical factors in the evaluation of landscape values, while the 'structuring and patterning' characteristics of any landscape influence preference at a level below this.
>
> Based on their research, Swaffield and Fairweather have identified two main paradigms that help to explain most New Zealanders' responses to landscape and their assignment of values to different types of landscape. The 'wild nature' paradigm, repeatedly identified in their research, is strongly correlated with the native endemic character of landscape scenes and the predominance of natural elements and patterns within them. The second, 'cultured nature' paradigm, is more accepting of exotic vegetation and productive rural uses, but again shows a strong aversion to obvious signs of development and buildings in the landscape. Inevitably, such interpretations of landscape are also closely aligned with the concept of 'natural character' as per section 6(a) of the Resource Management Act 1991 (RMA).

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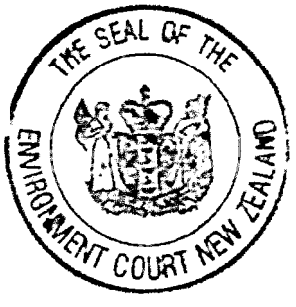
244 Section 6(b) of the RMA.

245 Including *Public Perceptions of Outstanding Natural Landscapes In The Auckland Region, Research Report No. 273,* John R Fairweather, Simon R Swaffield, David G Simmons. 2004.

246 Mr S K Brown, Statement of Visual Evidence paras 2.4 to 2.9 [Environment Court document 5].



We consider that research is consistent with the discussion of naturalness in landscapes in the cases. For example in *Harrison v Tasman District Council* the Planning Tribunal wrote[247]:

> The word "natural" does not necessarily equate with the word "pristine" except in so far as landscape in a pristine state is probably rarer and of more value than landscape in a natural state. The word "natural" is a word indicating a product of nature and can include such things as pasture, exotic tree species (pine), wildlife ... and many other things of that ilk as opposed to manmade structures, roads, machinery.

In fact a 'cultured nature' landscape in terms of the *Swaffield/Fairweather* analysis is simply a 'natural' landscape in terms of *Harrison*, and a pristine landscape (where it can be found) must be a very natural landscape.

[135] In *Wakatipu Environmental Society Incorporated v Queenstown Lakes District Council*[248] the Environment Court set out a list of criteria of 'naturalness'. We consider that the list becomes more useful if it is modified and extended so that the list of criteria of naturalness under section 6(b) of the RMA then includes[249]:

- relatively unmodified and legible physical landform and relief;
- the landscape being uncluttered by structures and/or obvious human influence;
- the presence of water (lake, river, sea);
- the presence of vegetation (especially native vegetation) and other ecological patterns.

The absence or compromised presence of one or more of these criteria does not mean that the landscape or coastal environment is non-natural, just that it is less natural. There is a spectrum of naturalness from a pristine natural landscape to a cityscape, and a 'cultured nature' landscape may still be an outstanding natural landscape.

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247 [1994] NZRMA 193.

248 [2000] NZRMA 59 at para (89).

249 The changes are that:
- 'relatively unmodified and legible' comes before 'physical landform'; and
- 'the presence of [vegetation] is substituted for 'the' in the fourth bullet point

- in the *Queenstown* case list.

1.10.4 The disputed evidence on the Long Bay landscape

[136] An important issue in these proceedings is whether any part of the LBSP area is an outstanding natural landscape or whether it is part of a wider such landscape under section 6(b) of the RMA. That turns in part on whether the coastline and regional park are part of an ONL. In our view the more difficult issue is not so much whether there is an ONL but where the outstanding natural landscape ends. There was some confusion between the witnesses over what was being described as a landscape and over whether the landscape or its features were natural.

[137] With the *Fairweather and Swaffield* study as background Mr Brown concluded[250]:

> ... it is my opinion that the coastline of the Okura Estuary and from Piripiri Point to Vaughans Stream, including a forest-clad Vaughans Stream Escarpment [the Homestead Spur], continues to be outstanding. It is relatively devoid of structures and overt signs of human activity, while the coast's natural landforms, dynamic coastal processes, and interplay of sea, cliffs, bays, gullies, ridges and pockets of native vegetation (creating a clear three dimensional structure and two dimensional patterning) are all consistent with the criteria for 'outstanding' landscape defined by the Swaffield / Fairweather research.

However, Ms Lucas wrote[251] 'This [the coastline] is not a landscape but a feature'. We agree, if only that statement is referred to. However, looking at Mr Brown's evidence as a whole we consider he was looking at the Hauraki Gulf-Long Bay landscape as identified in Landscape Units 51 and 54 in Plan Change 8 to the Regional Policy Statement. Each of those units is probably (just) large enough to be a landscape itself, not a (smaller) feature. Importantly that means Mr Brown was considering the interface between land and sea, and the landscape that includes the seascape.

[138] Mr Rough's conclusion as to landscape state was that[252] '... it is my opinion that the SPA and the adjacent Regional Park does not constitute an outstanding natural

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250 Mr S K Brown, evidence-in-chief Second Statement paragraphs 2.7 and 2.8 (p. 8) [Environment Court document 5A].

251 Ms D J Lucas, evidence-in-chief para 30 [Environment Court document 60].

252 Mr P Rough, evidence-in-chief para 105 [Environment Court document 28].

landscape'. His principal reason appears to be that while these two areas, and the head of Vaughans Stream (outside the LBSP area) contain outstanding features, those features[253] '... are generally too small, too scattered and too disconnected' to enable the overall landscape to be ranked as outstanding in terms of natural science factors. He came to similar conclusions in respect of aesthetic values, expansiveness and the other *Pigeon Bay*[254] factors. He did not consider whether any part of the LBSPA was in a different landscape from the rest.

[139] The second Landco landscape expert, Mr Boffa, wrote[255]:

> For the purpose of my assessment I have defined the Okura/Long Bay landscape as the area seaward and to the east of Okura River Road, bounded to the north by the Okura River and to the south by the Glenvar Road urban area.

He did not give an eastern boundary but the easternmost component of the landscape mentioned by him is the Long Bay Regional Park. He does not refer to the Hauraki Gulf or the seascape at all, nor did he give an opinion about whether there is an ONL, and if so, where it is. He obviously did regard the Piripiri Point and Grannie's Ridges as having outstanding qualities.

[140] Mr Coombs, the landscape architect called by the ARC, did not take a landscape-wide view and expressed no opinion about section 6(b) of the RMA and how it relates to the LBSPA.

1.10.5 Conclusions - Landscape

What is the relevant landscape?

[141] On the facts there are three areas at the northern end of North Shore City which are large enough to be coherently described as landscapes. First is the cityscape including that part of the LBSPA which contains the two schools and the residential enclave centred on Coventry Way; second is the marine reserve area of the Hauraki Gulf and an adjacent area of the coast; and the third area is the house/pasture/bush

253 Mr P Rough, evidence-in-chief paragraphs 97 and 98 [Environment Court document 28].
254 C32/1999.
255 Mr F Boffa, evidence-in-chief para 4.1 [Environment Court document 29].

mosaic which comprises the rural lifestyle landscape of Okura (and, possibly, parts of Long Bay) as described by Mr Boffa

[142] On Ms Lucas's evidence, as we understand it, the LBSPA is in the Hauraki Gulf outstanding natural landscape. On Mr Brown's and Mr Boffa's evidence the LBSPA is in the 'Okura/Long Bay landscape'. As for Mr Rough's evidence, it seems to us that he has not looked at the full picture and in particular where the landscapes begin and end. The real issue is where the boundary between the Gulf ONL and the Okura/Long Bay rural lifestyle landscapes is located. That depends on where the qualities of 'naturalness' and 'outstandingness' end.

North of Vaughans Stream

[143] Referring to the landscapes described in Change 8 to the RPS (and we discuss this in Part 2.0 (the Law) of this decision), Mr Brown wrote[256]:

> I can confirm that the resulting outstanding landscapes did not extend onto the ridges and slopes behind the Piripiri Point to Vaughans Stream coastline because of the modified nature of this landscape. I can further confirm that, even though the 'cultured nature' paradigm is more accepting of some forms of landscape modification, this does not extend to the type or level of development found within Long Bay, along the Awaruku Ridge or around the end of Vaughans Road. In addition, 'coastal backdrops' - to Long Bay, or indeed, any regional park - were not specifically considered in the course of identifying the region's outstanding landscapes. Consequently, I stand by the current delineation of Landscape Units 51 and 54 in Plan Change 8

While on the whole we are impressed with Mr Brown's evidence we are concerned that a small inconsistency crept in here. In the *North Shore Significant Landscape Features Study* quoted earlier the Piripiri Point Ridge[257] has its key attributes described as 'strong topographic relief and 'predominantly natural/rural skyline character' and its level of significance is 'outstanding'. It seems to us that logically an outstanding feature in the form of a 'major ridge' which is on the edge of, contiguous to, and in some ways defines, an admitted outstanding natural landscape, is itself part of the outstanding natural landscape if the feature is natural (which is one of its key attributes). On that

256 Mr S K Brown, rebuttal evidence para 8.13 [Environment Court document 5B].
257 Unit No 100 in the *Study*.

basis and because we prefer the evidence of Mr Boffa and Ms Lucas[258], we find that the east side of Piripiri Point Ridge is part of the ONL. Based on Ms Lucas' evidence so are the crest of Grannie's Ridge and west side of Homestead Spur (another outstanding feature) down to Vaughans Stream. We find all those features are natural and outstanding and part of the Hauraki Gulf/Long Bay outstanding natural landscape.

[144] We have had the benefit of other expert evidence about these landscapes and of a site inspection. Consequently we exercise the discretion - confirmed by the High Court in *Chance Bay Marine Farms Limited v Marlborough District Council*[259] and *Unison Networks Limited v Hastings District Council*[260] - to make our own assessment of the outstanding natural landscapes based on the evidence.

Is the rest of the LBSPA natural and outstanding?

[145] More difficult to place are the Vaughans Stream Estuary, the regional park south of the stream, and the Awaruku headland and eastern edge of the ridge. Mr Brown wrote that[261]:

> ... Long Bay's association with nearby residential development, Long Bay College, even structures and development within the Regional Park prevent it from still being regarded as outstanding. Indeed, this confirms the Environment Court's view - as expressed in its 1996 decision - which described the southern half of Long Bay Regional Park as being more akin to an urban park, as opposed to the sort of natural, even wild, remote, regional parks otherwise found within the Auckland Region.

[146] Neither the presence of the buildings and structures we have described in the Regional Park (including a pavilion, restaurant, kiosks, information centre, changing sheds and toilets, accommodation and carparks), nor the frequent presence of large numbers of people, nor the presence of ecologically debased farmland in our view necessarily give the landscape in which it is set an unnatural character. To the contrary, it meets the criteria we identified earlier: it is relatively unmodified topographically; it is relatively uncluttered - there are some fences, farm tracks and buildings; the sea of

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258 Ms D J Lucas, evidence-in-chief Appendix 4 para 30 [Environment Court document 68].
259 HC, Wellington AP 210/1999, 15 March 2000 (Doogue J).
260 HC, Wellington, CIV 2007-485-896 (Potter J).
261 Mr S K Brown, evidence-in-chief Second Statement para 2.2 [Environment Court document 5A].

the Hauraki Gulf is part of the landscape; and there are both introduced grasses and patches of native bush. Those introduced aspects do not necessarily colour the whole landscape as 'unnatural', so give weight to Ms Lucas' argument that the whole of Long Bay Regional Park and the Awaruku Ridge is natural.

[147] However, in the end we find that the areas south of Vaughans Stream - while they are 'natural' on a straight-forward application of that word - falls well short of being sufficiently outstanding to be part of an outstanding natural landscape[262].

[148] We find as a matter of fact and judgement that the landward edge of the Hauraki Gulf Long Bay ONL containing the Long Bay Marine Reserve can be tracked on our attachment "A"[263] as follows:

(1) the boundary starts at the mean high water mark on the southern side of Vaughans Stream
(2) runs up the southern bank of Vaughans Stream to
(3) almost the confluence of Vaughans Stream and Stream 0
(4) proceeds northwards up the Homestead Spur until
(5) it meets the Grannie's Ridge at which point the ONL 'boundary' turns west until it in turn joins
(6) the Piripiri Point Ridge, and then follows that ridge to Piripiri Point itself.

[149] For the remainder of the LBSP area we find first that it is either part of the urban area, or (most of it) is part of the Okura/Long Bay rural lifestyle landscape; secondly that, at present, all of the LBSP area, other than the urban part, has a natural character within the meaning of section 6(a) of the RMA.

1.11 Traffic and transportation

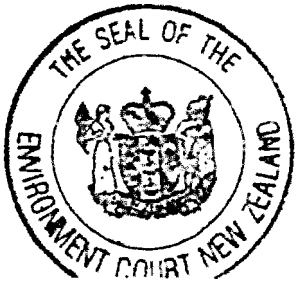
[150] We read and heard the evidence of three experts in the general field of transportation planning, namely Messrs I Constable and K Lee-Jones for NSCC and Mr I Clark for Landco. Mr Johnston for OEG gave evidence specifically on Vaughans

262 Mr B T Coombs, evidence-in-chief para 4.7 [Environment Court document 55].
263 Copy of Ex DK07 [Environment Court document 12].

Road traffic. Joint statements[264] signed by the expert witnesses relevantly record their agreement that:

- a "proposed" road network with four connections from the LBSPA to the existing network[265] will be needed to serve the "full development";
- subject to traffic modelling, one vehicle crossing of Vaughans Stream complemented by a secondary crossing for pedestrians and cyclists is sufficient;
- the "school environment" on Ashley Avenue and Ralph Eagles Place requires appropriate road design "to discourage through-traffic adjacent to the schools";
- Beach Road extension, Ashley Avenue extension and the [Glenvar] Valley route should be designed to be served by public transport;
- both structure plan "proposed" road layouts are functional in terms of meeting anticipated transport demand, except at the village centre;
- a SATURN traffic model has been jointly developed and accepted as being "fit for purpose".

Agreement was also reached on network improvement works for inclusion in the traffic model. Some are already in the NSCC Long Term Council Community Plan ("LTCCP") and others were agreed as necessary to maintain the network's operational integrity. The resultant 2021 traffic model is suitable for assessing the effects of both structure plans.



264 Joint statement in relation to transportation matters, 7 March 2007, and second joint witness statement for developing traffic model, 29 June 2007 [Environment Court document 6].

265 Being the proposed roads and network connections described in Part 0.0.

2.0 The law

2.1 The district plan

2.11 Introduction

[151] In Part 0.6 of this decision we outlined the procedure we must follow. We now identify the various matters which have to be considered under the relevant statutory instruments and provisions. We start by considering the provisions of the North Shore City Council's district plan - the City Plan. We need to interpolate another issue at one point because there are some other proposed plan changes to the City Plan which are not the subject of these proceedings but which may be relevant to them. We then return to other (unchallenged) objectives and policies in the City Plan, before we continue with the other relevant considerations.

[152] We should explain that the unusual hiatus in the North Shore City Council's finalisation of the relevant objectives and policies has been caused by other statutes, not by the RMA. In 2000 Parliament passed the Hauraki Gulf Marine Park Act 2000 ("the HGMPA") and in 2004 the Local Government (Auckland) Amendment Act ("LGAAA") of that year. Both Acts imposed obligations on the Auckland Regional Council and on Auckland's territorial authorities to change their plans to give effect to the relevant statutes within time limits. Those duties under the LGAAA explain why NSCC's earlier Plan Change 6 we are considering here has been overtaken by as yet unresolved Plan Change 12.

2.12 The contents of the City Plan

[153] The operative North Shore City Plan is contained in three volumes: two of issues, objectives, policies and methods and one of maps. The most relevant Chapters[266] in the first two volumes of the City Plan are **emphasised** in the following list:

(Volume 1)

1. User Guide
2. District Plan Development
3. Procedures and General Rules

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266 The NSCC District Plan calls each of the chapters a 'section' but, unless quoting from the plan, we will use the word chapters to avoid confusion with sections in the RMA.

4. Resources of the City
5. **Issues and Goals**
6. **Managing the Growth and Development of the City**
7. **Tangata Whenua Values**
8. **Natural Environment**
9. **Subdivision and Development**
10. **Pollution and Waste Management**
11. **Cultural Heritage**
12. **Transportation**
13. Signs
14. Public Works and Network Utilities

(volume 2)

15. Business
16. Residential
17. **Urban Expansion**

17a. Structure Plans

18. **Rural**
19. Recreation
20. Special Purpose
21. Definitions

2.2 The Scheme of the City Plan

2.21 The hierarchy of objectives and policies

[154] The City Plan explains the intended relationship between the objectives and policies in the various chapters as follows[267]:

> The relative importance of particular objectives in the Plan is reflected in the hierarchical approach which has been adopted. At the top of the hierarchy, Section 5 sets out the broad resource management goals for the city. The second tier of the hierarchy comprises a set of strategic objectives and policies which deals with the overall form of the city. At the third level are the detailed objectives, policies and rules, which indicate the specifics of how the effects of activities and development are to be controlled.

[267] NSCC City Plan Volume 1, Chapter 2 para 2.5 [p. 2-6].

In fact the structure of the City Plan is not as easy to understand as that passage suggests. There are difficulties: first it is not easy to ascertain where in the three tiers of the hierarchy certain objectives stand; secondly, in working out the relationship between objectives in the third tier, and thirdly ascertaining whether there are in fact yet lower levels of objectives and policies as we discuss in relation to Chapter 17.

[155] It is clear that the 'goals' in Chapter 5.5[268] are at the apex of the pyramid, and that the second tier strategic objectives and policies dealing "with the overall form of the city" include those set out in Chapter 6.3[269]. Although the division between second and third tiers is not so obvious because Chapters 7 to 14 also contain some provisions which apply throughout the City, we conclude that the third tier provisions are dealt with in all of the later chapters of the Plan, that is Chapters 7 to 20. Some of the third tier provisions are City-wide and others are area-specific and/or apply to activity zones.

[156] New Chapters 9A and 17B guiding (respectively) subdivision and development and subsequent activities under the Long Bay Structure Plan are proposed by the NSCC and by Landco. We discuss the appropriateness of such chapters in later parts of this decision. We now turn to describe the relevant objectives and policies in the City Plan, starting at the top.

2.22 Tier 1: The Goals (Chapter 5 of the City Plan)

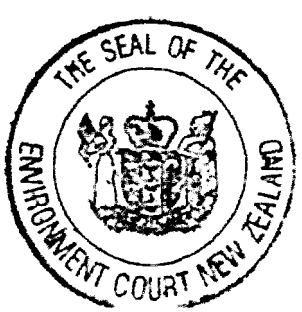
[157] Chapter 5 discusses the issues facing North Shore generally and then continues with a statement of general goals for the City. Because those objectives have been completely overlooked by the witnesses we set out the relevant part of operative Chapter 5 in full[270]:

> **5.5 Goals for North Shore**
>
> On the basis of the issues discussed above, the Council has adopted the following resource management goals **to guide the formulation of the objectives and policies** in the Plan:

268 In Plan Change 2 (discussed soon) these become Chapter 6.3.
269 In Plan Change 2 (discussed soon) these become Chapter 6.4.
270 NSCC District Plan [June 2002] pp. 5-14 and 5-15.

- *Urban Growth:* to enable urban growth and development in a sustainable manner which avoids, remedies or mitigates adverse effects on the environment
- *Coastal Environment and Access:* to maintain and enhance the quality and preserve the natural character of the coastal environment on the North Shore and provide for public access along the coastline
- *Environmental Protection:* to ensure that the existing quality of water, air and soil is not degraded, particularly in highly sensitive ecosystems, and that where possible, quality is enhanced
- *Natural Heritage:* to protect areas of significant vegetation, habitats of indigenous fauna, and outstanding landforms and geological features
- *Landscape Protection:* to recognise, protect and rehabilitate significant elements of the environment which contribute to its special character, such as native bush, waterways, coastal areas and geological features
- *Tangata Whenua Values:* to respect the values of tangata whenua, involve them in management of resources of concern to them, and take into account the principles of the Treaty of Waitangi
- *Heritage:* to maintain and enhance the cultural heritage significance of the city
- *Residential Amenity:* to maintain and enhance residential amenity on the North Shore in a manner which reinforces the diverse character of different localities and manages adverse effects
- *Business Activities:* to manage business activities in a manner which allows for maximum business growth and development, and utilises existing infrastructure without compromising the natural environment or the amenity of residential areas
- *Global Conservation:* to contribute to national and international efforts to conserve global resources, lower greenhouse gases and ozone depleting substances, and promote biological diversity
- *Business Amenity:* to ensure a high standard of amenity in business areas, appropriate to the characteristics and function of different areas
- *Environmental Sustianability:* to manage urban development in a way which seeks to achieve a city which is environmentally sustainable
- *Diversity:* to manage natural and physical resources in a manner which enables diversity and choice in residential, business and leisure environments within the city, to accommodate a wide range of needs and values, and to take account of changing economic, social and cultural conditions
- *Accessibility of Resources and Facilities:* to manage urban development in such a way that accessibility to the city's resources and facilities is maintained and, if possible enhanced
- *Network Utilities Infrastructure:* to ensure the provision of service infrastructure to meet current and future needs without adversely affecting the environment of the North Shore.

[Emphasis added]



Although they are called 'goals' we hold that their place in the City Plan, and their stated guiding purpose in the hierarchy shows that they are, in law, higher level objectives. In effect they are the top tier in the pyramid of objectives. Potential tensions are evident in the objectives between protection of natural habitat and ecological values, and retention of significant landscape features and growth and development. However, we hold that at this highest level of the City Plan there is an overall emphasis on enabling growth and development in a 'sustainable manner' which maintains, protects and/or enhances natural resources and contrasts with the qualified language of the growth and development goals.

2.23 Tier 2 objectives: Managing growth and development (Chapter 6)

[158] Underneath the high-level Chapter 5 objectives, the second tier objective is[271]:

> To manage the effects of urban growth in a manner which:
>
> - Maintains or enhances amenity values for the existing built-up areas
> - Avoids harm to valued natural environments and habitats
> - Protects significant elements and features of the North Shore landscape
> - Encourages a reduction in the use of private motor vehicles and increased use of public transportation
> - Enables the efficient use of natural and physical resources
> - Enables social, economic and cultural well-being
> - Has regard to the need to ease traffic congestion, particularly on the Harbour Bridge in the peak direction
> - Preserves items or areas of significant heritage value
> - Protects important coastal landscapes and features.

In five of its nine bullet points, this objective is also noticeably free of qualification in its aim to 'avoid harm', 'protect', and 'preserve' different elements of the natural and heritage environment. It also contains two important wellbeing (albeit enabling not directing) provisions so that the same tension we observed in the goals is contained in the second tier objectives.

[271] Objective 6.3 'Urban Growth Strategy' [NSCC Operative District Plan June 2002, p. 6-6].

[159] The policies to implement those objectives are (relevantly)[272]:

> ***Policies***
>
> ...
>
> 3. By enabling a differentiated pattern of residential development to emerge **on the periphery,** that minimises impacts on environmentally sensitive landscapes and coastal estuaries, and occurs in an orderly manner and in a way that **supports the development of proposed centres,** and the efficient extension or upgrading of roads and utility services.
>
> ...
>
> 6. By enabling efficient use of passenger transport by encouraging retail and related business activity to locate in existing or proposed centres, or along selected main transport routes where appropriate.
>
> 7. By providing improved opportunities for residents to walk or cycle to work and shops.
>
> [Emphasis added]

The LBSP area is obviously on the northern and eastern peripheries of the City, so that policy 3 is of core importance in these proceedings with its reference to minimising impacts on 'environmentally sensitive landscapes' and "coastal estuaries" while 'supporting] ... the development of proposed centres'. Policies 6 and 7 are important in relation to setting a framework for urban design within the LBSP area.

[160] The explanation and reasons state[273] that:

> The preferred urban growth strategy is one that enables new growth in both built-up and peripheral areas. ..... **In the peripheral areas** it is expected that a more varied pattern of housing development will emerge than has occurred to date, reflecting the diversity of landscapes and provision of community focal points.
>
> This "shared growth" strategy with a more differentiated pattern of residential development has the following advantages:
>
> (a) It provides for the projected growth of 13,000 to 19,500 dwellings in the next 20 years, located approximately as indicated in Table 6.l

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272 District Plan p. 6-7.

273 NSCC District Plan June 2002 pp. 6-7 and 6-8.

Table 6.1 North Shore City **Projected Number of Dwellings, 2014**	
Growth Areas	**Number of Dwellings**
Infill development	6,000 – 8,000
New development	-
- Albany	3,000 – 4,000
- Greenhithe	1,500 – 3,000
- Okura/Long Bay	*2,500 – 4,500*

[Italics added]

(b) By providing for both infill development in built up areas and new development on the periphery, it recognises that a balanced approach should be adopted which:

i) ...

ii) On the periphery of the urban area:

- Recognises the role of some land on the periphery in providing affordable housing for young residents wishing to form households, due to lower land costs.
- Minimises the potential for residential growth to detrimentally impact on natural landforms, bush cover, streams and coastal estuaries.
- Reduces the pressure for intensification in built-up areas.
- Utilises the main roading and utility connections substantially in place to serve the business and residential growth areas.

2.3 Proposed plan changes to the City Plan

2.31 Introduction

[161] There are 25 or more proposed plan changes to the operative district plan. Of those, two - Plan Changes 2 and 12 - are possibly relevant because they propose to change higher order (Tiers 1 and 2 in the language of the City Plan) objectives and policies we are meant to be implementing. That highlights an unusual aspect of this case to which we have already drawn attention: we are being asked to implement a structure plan under unsettled objectives and policies. That situation appears to have arisen mainly as a result of the NSCC complying with the LGAAA (which we discuss below). We are rather doubtful whether we should have regard to any proposed plan change for two reasons: first, neither section 74 nor any other provision of the RMA

requires us to consider other plan changes; and secondly no part of either Plan Changes 2 or 12 has yet been approved by the Council[274]. However, there are countervailing factors: much of Plan Changes 2 and 12 is now probably beyond challenge; they represent a more up-to-date statement of the NSCC's strategic objectives and policies than the operative district plan; and they fulfil the NSCC's duties under the LGAAA.

[162] There are three outstanding appeals to Plan Change 2, affecting Chapters 4, 5 and 6. These are on hold pending the outcome of the subsequent Plan Change 12 process. The decisions version of the Proposed Plan Change 12 was released on 31 July 2007. The three appeals (to Plan Change 2) seek that the whole of the plan change be deleted or withdrawn. They also seek, in the alternative, quite specific amendments to the wording of only some of the provisions in Chapters 4, 5 and 6, leaving substantial parts of Plan Change 2 not specifically challenged. Two of the appeals are identical and the essence of their detailed alternate relief is to more strongly emphasise the centres-based strategy. The third appeal seeks to recognise the efficient use of major transportation routes, particularly roading, and to recognise the role of private transport. Still it is wrong at law to say that Plan Change 2 is beyond challenge while three general appeals are outstanding.

[163] Seven appeals have been lodged against Plan Change 12, including appeals by the same three appellants as to Plan Change 2. None of the seven appeals seeks to have Plan Change 12 deleted or withdrawn. All appeals seek quite specific relief by amending the wording of the provisions. This reinforces our earlier conclusion that it is most unlikely that the pursuit of the three outstanding appeals to Plan Change 2, which are to be resolved in conjunction with those relating to Plan Change 12 and the regional Change 6, will result in the deletion of Plan Change 2. Rather, the more specific alternative reliefs sought will result in the amendment of some provisions. The appeals most likely to affect provisions relevant to the LBSPA are those lodged by the same three parties previously discussed with respect to Plan Change 2 appeals. They seek similar relief to that sought for Plan Change 2, that is: increased emphasis on a centres-based strategy; and the use of major transportation corridors for commercial activities, particularly large format retailing. From our reading of the Notices of Appeal we do

[274] Under clause 17(2) of the First Schedule to the Act.

not consider that the resolution of the appeals will substantially alter the guidance provided by the decisions versions of Plan Changes 2 and 12 for the LBSPA.

[164] The position is complicated further by the fact that the relevant Plan Changes 2 and 12 purport to change at least some of the same provisions in Chapter 6 of the operative plan. In our view that is an incorrect procedure. Either:

- Plan Change 2 should have been withdrawn at least in part - probably before any hearing before the Environment Court commenced[275] (see *Island Bay Residents Association (Incorporated) v Wellington City Council*[276]*)* - and Plan Change 12 notified; or
- if the Council wanted to keep submitters' rights on Plan Change 2 open it could have notified a variation[277] (using the words of Plan Change 12) to Plan Change 2.

The problem is demonstrated by the fact[278] that part of Plan Change 12 has been subsequently called - in the Council's decision on Plan Change 12 dated 7 June 2007 - 'Variation 1 (to Proposed Plan Change 2)' where 'Plan Change 12' in fact seeks to vary Plan Change 2, rather than the operative district plan. However, we do not have any evidence that Variation 1 was ever notified[279] as such, so we are rather dubious as to its legality. We will consider the weight to be given to these (and other) instruments at the end of this part of the decision.

2.32 Tier 1 objectives: The goals

[165] The NSCC's decisions on Plan Changes 2, and on 12 and 'Variation 1' (to Plan Change 2) move the goalposts (twice) so that as at 7 June 2007 the goals state[280]

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275 See clause 8D(1)(b) of the First Schedule to the Act.

276 [2000] NZRMA 399 at 409.

277 See clause 16A of the First Schedule to the RMA: it expressly states that a variation may be on a plan change.

278 Refer to the title page of decisions version "Proposed Plan Change 12 and Variation 1 to Proposed Plan Change 2" as decided on 7 June 2007 by the NSCC.

279 Refer to the title page of the notified version "Proposed Change 12" contained in the NSCC District Plan's volume of "Modifications".

280 District Plan as amended by NSCC Decision 7 June 2007 on Plan Change 12 and 'Variation 1'.

(underlined words added to Plan Changes 2 and 12 by the Council's decision and struck-through words deleted):

6.3 **Goals for North Shore**

On the basis of the issues discussed above, the Council has adopted the following goals to guide the formulation of the objectives and policies in the Plan:

- *Natural Environment:* A city which protects its natural habitat and ecological values and retains its significant landscape features. A city which retains the natural character of its coastline and provides easy access to safe and clean swimming. A city in which public open space is available and well used by the community. An overall result of this being a city which allows and encourages development which is responsive to these values
- *Built Environment:* A city which provides a wide variety of housing forms which reflect the demands of its ageing population and increases the accessibility to employment and community facilities, while offering a range of affordable options. A city which encourages and celebrates quality design that enhances and reflects local character and the cultural and social needs of the community. A city which adequately services its built form in a way that ensures the protection of its highly valued natural environment. A compact contained City with a quality built environment, focused around selected sub-regional and town ~~and village~~ centres and passenger transport nodes that supports goals for the natural environment, for ease of movement community wellbeing and economic growth
- *Ease of Movement:* A city which effectively integrates its land use pattern with transport, and encourages the development of an urban form which is less reliant on the private motor vehicle. A city which utilises the full range of modes of movement particularly public transport while reducing the overall effects of transport on the environment
- *Community Wellbeing:* A city which provides a wide range of easily accessible community facilities which satisfy the diverse social and cultural needs of the community. A high level of pedestrian amenity, personal safety and the potential for crime is recognised in the design of these public places, with the overall result being an increase in the usage of public spaces, community facilities and the parks network
- *Employment and Economic Growth:* A city which is recognised as an ideal business location with access to a well educated and highly skilled workforce and supported by an infrastructure which allows employment and economic growth to be maximised. A city which focuses its businesses around the existing sub-regional, town and village centres while supporting its Wairau Valley and the North Harbour Industrial Estate employment areas, allowing for mixed use areas and working from home where the activities are compatible with the surrounding uses

- *Managing Change:* A city which effectively consults with and includes its community in decision making while co-operating with other authorities on regionally strategic policy. A city which manages development so that it matches the needs of the community, the capacity of the environment and infrastructure. A city which manages infrastructure provision in a way that both ensures the provision, operation, maintenance and upgrading of infrastructure that contributes to the growth concept in the Auckland Regional Growth Strategy and land use transportation integration (including regionally or nationally significant infrastructure) and avoids the adverse effects of that on communities.

[146] There are a number of points we need to make about these goals:

(1) If one looks at the last of those goals - *Managing Change* - with its reference to '... manag[ing] development so that it matches the needs of the community, the capacity of the environment and infrastructure' it looks as if the importance of environmental constraints has been reduced. However, it is significant that of the six goals the first three all strengthen protection of the natural environment and indeed that the goal for the *Built Environment* specifically 'supports goals for' the *Natural Environment.*

(2) Further, Plan Change 2 specifically amends the introductions to most of the subsequent chapters in the City Plan by identifying which of the six goals are relevant to each chapter. The Plan Change 2 amendment to Chapter 17 excludes the goal "Managing Change" as relevant to Chapter 17.

(3) The 'Built Environment' has been amended with a sentence describing this goal as seeking:

> ... A compact contained City with a quality built environment, focused around selected sub-regional and town ~~and village~~ centres and passenger transport nodes that supports goals for the natural environment, for ease of movement, community wellbeing and economic growth.

'Sub-regional [centres]' and 'town centres' are not defined. That caused some confusion to the planning witnesses and counsel.

2.33 Tier 2 objectives

[167] Next step down the hierarchy of objectives in the City Plan, the Tier 2 objectives are changed by Plan Change 12 to read[281] (the amendments shown by underlining and strike-through were made in the NSCC's decisions versions of Plan Changes 2 and 12):

6.4 Urban Growth Strategy

Objectives

1. **To effectively manage growth and change by ensuring that: ~~To achieve~~ a** compact sustainable urban form is contained within the defined metropolitan urban limits, with more intensive business and residential activity based on selected sub-regional and town **~~and village~~ centres, passenger transport nodes and transport corridors** on a progressive basis and in accordance with Table 6.1, well integrated with a multi-modal transport system and infrastructure network, which:

   - ensures the protection and enhancement of a high quality natural environment;
   - secures a high quality built environment;
   - enables an ease of movement and accessibility that minimises the impact on the environment;
   - fosters community wellbeing;
   - achieves a buoyant local economy and employment growth;
   - achieves integrated planning;
   - avoids conflicts or incompatibilities between existing and future infrastructure (including regionally or nationally significant infrastructure) and land use.

2. To secure a prosperous city by the year 2020 that protects and enhances its natural environment while providing easy access to a range and abundance of opportunities to live, work, play and visit.

It will be seen that the undefined 'sub-regional and town ... centres, passenger transport nodes' are to be based 'in accordance with Table 6.1'.

[168] Table 6.1 referred to in the policies in Section 6.4 - Urban Growth Strategy was added by the Council's decision of 7 June 2007 on the plan changes to read (relevantly):

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281 District Plan p. 6-6.

Table 6.1 Schedule of sub-regional and town centres required in accordance with Auckland Regional Policy Statement		
Schedule 1 Sub-regional centres and town centres	**Date of Initial Plan change to be Notified**	**Comments**
…	…	…
Long Bay (Review)	Timing to be determined	Possible Plan Changes may be required as ~~town centres develop in~~ new greenfield expansion areas develop.

The struck-through words at least raise the suggestion that a 'town centre' is not confirmed despite the heading. We mention that because an important planning witness for Landco, Mr A A Bradbourne wrote[282]:

> The most significant feature of Plan Change 12 in the context of the Growth Concept debate is that it reaffirms Long Bay as a proposed town centre "required in accordance with the Auckland Regional Policy Statement" - (see the heading to table 6.1 on page 34).

Looking at Table 6.1 the deleted words suggest that is the wrong interpretation. The way we read Table 6.1 is that some urban expansion is anticipated in the green fields of Long Bay. Whether that expansion should lead to a town centre is up for review and may possibly require 'plan changes', but in any event a town centre is not confirmed at Long Bay yet.

[169] Mr Bradbourne attempted to reinforce his view of what was changed by Plan Change 12 when he wrote[283]:

> Prior to amendment Plan Change 12, table 6.1 [in Plan Change 2] read: "Possible Plan Changes may be required as town centres develop in greenfield expansion areas". I do not consider that the amendment, which deletes reference to the town centres is intended to indicate that Long Bay is no longer identified for development as a town centre because:
>
> - The amendment was made as a part acceptance of a submission by the Long Bay Okura Great Park society to remove Long Bay from the schedule "so that Long Bay is not developed as a town centre". The [NSCC Hearing] Panel said it was "accepted in part

212 Mr A A Bradbourne, Third statement of evidence para 37 [Environment Court document 80B].
213 Mr A A Bradbourne, Third statement of evidence para 38 [Environment Court document 80B].

> in as much as it opposes specific reference to town centre development in the Long Bay area and Table 6.1 ..."[284]. This clearly falls well short of the submission objective of having Long Bay removed from the schedule of town centres and the preclusion of a town centre at Long Bay:
>
> - The entire content of the table is entitled "Schedule of sub-regional and town centres required in accordance with the Auckland Regional Policy Statement";
> - The Panel "accepts the inclusion of these **centres** in Table 6.1"[285] (my emphasis). The centres are identified in the first sentence of that same bullet point as "the Albany Village, Mairangi Bay, Long Bay, Torbay, and Greenhithe";
> - The text of that same paragraph makes it clear that it is only a matter of time and process before centres are developed in these areas, and that the requirement for "increased certainty" in Schedule 5 of the LGAAA places a fundamental obligation on planning authorities to give short and longer term guidance as to the future urban form envisaged.
> - The NSCC through various instruments has foreshadowed that Long Bay will accommodate a town centre.

Mr Bradbourne's reference to the Council's reasoning (at p. 15 of its report) is wrong because its recommendation is clearly that Long Bay is not a confirmed centre, and that is reflected in the changes to Table 6.1. Mr Bradbourne also says the text of the first bullet point 'makes it clear that it is only a matter of time and process' before Long Bay is developed as a centre. We are baffled by that because the actual words of the Council report as it relates to Long Bay *(inter alia)* are:

> the ... Long Bay ... centre ... in Table 6.1 [is] only likely to be considered ... for more intensive development in the longer term and then only subject to considerable further investigation ...

The Council was there using the word 'centre' for convenience to identify Long Bay amongst other places.

[170] Nor does Mr Bradbourne give any supporting evidence to support his assertion that various other NSCC '... instruments ... foreshadow ... that Long Bay will accommodate a town centre'. That is not borne out by the policies which implement objective 6.4 which we refer to next. In particular policy 2 states that 'Some locations

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284 Hearing Panel Decision Report NSCC 1 - General Growth p. 15.

285 NSCC Decision 7 June 2007 p. 15 of NSCC Growth - General [first bullet point, last sentence].

within [the Albany, Greenhithe and Long Bay] areas may be selected ... as town centres ...'] Our interpretation is reinforced by the fact that Plan Change 12 is clearly intended to implement Change 6 to the Auckland RPS, and that (as we shall see) describes Long Bay as a 'Future Urban Area' not as a town centre. We hold that the meaning of Table 6.1 is that development of Long Bay for some housing and businesses is directed, but not necessarily at a scale to make it a 'town centre'.

[171] The new policies to implement objective 6.4 now read[286]:

Policies

1. Development opportunities and requirements for more intensive forms of residential and business development will be provided for in and around selected sub-regional and town ~~and village~~ centres, passenger transport nodes and on transport corridors on a progressive basis in accordance with Table 6.1 to give effect to the Auckland Regional Growth Strategy, ~~and~~ in accordance with Schedule 1 of Chapter 2 of the Auckland Regional Policy Statement (ARPS) and Schedule 5 of the Local Government Auckland Amendment Act 2004 (LGAAA). This is to support the growth of employment, ~~and~~ economic and passenger transport activity within these centres provided it demonstrates a high standard of design and compatibility with surrounding activities. This range of activities will facilitate ~~and~~ ease of access between housing, employment, shopping and community facilities. In providing for more intensive forms of development, regard shall be had to densities set out in Appendix H of the ARPS, ~~wherever practicable to do so,~~ accepting that the densities are non-mandatory guidelines and may not always be achievable due to constraints identified during centre planning.
2. Urban expansion will be contained within the metropolitan urban limits in the Albany, Greenhithe, and Long Bay areas and will proceed in a way and at a rate that matches transport and infrastructure planning and provision. Some locations within these areas may be selected for more intensive forms of residential and business development as sub-regional and town ~~or village~~ centres, but the ~~detrimental~~ cumulative adverse effects of urbanisation on the local natural environment including native bush, streams, waterways and ecosystems will be minimised.
3. To enable a wide choice of lifestyles, a range of types and affordability of housing and choice of employment opportunities should be investigated and provided where possible.

[286] District Plan p. 6-7 and Para 2.7 of Appendix 1 to NSCC Decision, 7 June 2007.

4. Areas characterised by historic housing, ecological values, natural landscapes, coastal landforms, rural character or cultural heritage values should be protected from incompatible development.

5. To foster and promote the city's sense of place and identity.

6. To provide for enhanced accessibility to recreation, community facilities, employment and the coastline by facilitating an effective and efficient transport system, ease of access to public transport, improving the walkability of our neighbourhoods and the provision of a Bus Rapid Transit system.

7. To integrate transport and land use planning in order to maintain and enhance accessibility. Through the development and implementation of integrated transport and land use provisions, consistent with Schedule 5 of the Local Government (Auckland) Amendment Act (2004):

   - support the concentration of retail, employment and community activities within selected sub-regional and town ~~and village~~ centres with appropriate transport infrastructure;
   - incorporate measures that achieve and enable higher density residential, employment and mixed use development within and around ~~identified~~ selected sub-regional and town ~~and village~~ centres, passenger transport nodes and transport corridors; ~~and~~
   - set high standards for urban amenity and design to facilitate a range of quality retail, employment, mixed use and living environments within ~~identified~~ selected sub-regional and town centres, passenger transport nodes and transport corridors.
   - Ensure that the development of selected sub-regional and town centres, passenger transport nodes and transport corridors proceeds in a way and at a rate that matches transport and infrastructure planning and provision.

8. A high level of education and skills possessed by the city's population will be fostered and promoted to encourage employment growth.

9. Healthy and active lifestyles will be encouraged by ensuring that the reserve network meets the needs of the community, ensuring a pleasurable environment for cycling and walking and ensuing that the cultural and social needs of the community are met.

10. Integrated planning of growth to match the needs of the community and the capacity of infrastructure needs to be used in a way that protects environmental values, and avoids the adverse effects of growth that will arise if land use, community and infrastructure planning (including planning for regionally and nationally significant infrastructure) that contributes to the growth concept in the Auckland Regional Growth Strategy and land use transportation integration, is not co-ordinated and sequenced correctly. Infrastructure planning and new growth need to be carried out and sequenced in a timely and efficient manner if the desired urban form is to be achieved and if infrastructure is to be efficiently provided, operated, maintained and upgraded.

11. By maintaining and enhancing employment and economic growth within the main business employment areas of the Wairau Valley and the North Harbour Industrial Estate by a range of techniques including the avoidance of adverse reverse sensitivity effects.
12. Structure planning will be utilised as an effective technique for managing major areas of growth and redevelopment.
13. Through the approach of integrated planning Council will seek to influence the rate and form of development growth in order to avoid the adverse effects associated with ad-hoc development.
14. Community and regional partnerships and the involvement of the community in decision making will be encouraged.

[172] Given the differences over how to read Table 6.1 (quoted above in this part) - which refers to 'Long Bay' under the heading 'Sub-regional and Town Centres', then describes it is as a 'greenfield expansion area' in the specific entry for Long Bay - it is perhaps useful that policy 1. states that requirements for more intensive forms of development will need to accord with Schedule 1 of Chapter 2 of the ARPS. We assume that means that the ARPS prevails when its Schedule 1 lists Long Bay as a 'Future Urban Area' not as a 'High Density Centre' (which includes 'Town Centres), nor as a 'corridor'.

2.4 The settled, third tier objectives and policies in the City Plan

Chapters 7 to 20 of the City Plan

[173] The third tier of objectives and policies is found in Chapters 7 to 20 of the City Plan. We consider the relevant chapters in turn.

Tangata Whenua Values (Chapter 7)

[174] Relevantly this includes an objective[287] requiring identification and protection of Maori traditional sites of special significance to tangata whenua. That is of importance for two reasons. First we have found that part of the Awaruku Headland and Ridge is of special significance to some of the tangata whenua. Secondly because we are given clear guidance. The objective is uncompromising: once sites of special significance are identified they are to be 'provide[d] protection' (this is of course subject to the weighing exercise in section 5(2) of the RMA).

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287 Objective 7.4 NSCC District Plan p. 7-4].

Natural Environment (Chapter 8)

Coastal conservation

[175] The first relevant objective is for coastal conservation. It is[288] "To protect the natural character, public access, cultural heritage values, ecology and landforms of the coastal environment". That is slightly more focussed than section 6 of the RMA. First, the list of elements to be protected includes more than simply the 'natural character'[289] of the coastal environment. Secondly the objective does not qualify the protection of those elements by adding '... from inappropriate development'. We infer that North Shore City, which has a limited quantity of the identified natural elements in its coastal environment, has decided that it generally wishes to retain what is left.

[176] The relevant implementing policies come under subheadings[290] as follows:

> **Policies - Natural Values**
>
> ...
>
> 6. By ensuring that the effects of any buildings or any structures, including erosion control works and stormwater outlets. within the coastal environment do not adversely affect natural values or natural character.
>
> 7. By ensuring that wherever possible stormwater disposal from coastal sites be directed away from the coastal edge.
>
> ...

Ecosystems

[177] There is a separate objective for ecosystems[291]:

> **Objective**
>
> To protect and enhance significant habitats of native fauna and flora to maintain biodiversity, and for their intrinsic, educational and recreational values.

288 Objective 8.3.1 [NSCC District Plan p. 8-4].
289 To use the phrase in section 6(a) of the RMA.
290 Objective 8.3.1 [NSCC District Plan p. 8-5 and 8-6].
291 Objective 8.3.2 [NSCC District Plan p. 8-9].

[178] The first particularly relevant policy for achieving the 'ecosystems' objective is[292]:

> ...
>
> 3. By seeking the provision of suitable buffers of undeveloped land around waterbodies, estuaries, wetlands and the foreshore so as to protect natural ecosystems by means of esplanade reserves.

Policy 3 is a curiously limiting provision because there are several other ways of obtaining buffers around wetlands than by means of esplanade reserves under the Reserves Act, e.g. district plan rules, covenants, private 'reserves', Queen Elizabeth II covenants. Does the policy mean those should not be considered? We consider the answer is 'no' because the policy does not suggest that those other techniques are excluded and it is limited to the margins of water bodies so that other techniques may be used beyond those margins. Also, as we mention below, there are other policies, such as those supporting objective 8.3.5, which recognise a wider range of mechanisms.

[179] There follow two important policies[293]. The first relates to vegetation removal and earthworks:

> ...
>
> 6. By avoiding earthworks and vegetation removal affecting ecosystems and habitats.

That policy is in unusually strong terms - earthworks and vegetation removal must avoid affecting ecosystems and habitats. Taken literally that policy is unachievable because removing any vegetation and/or earthworks always appears to affect ecosystems to some extent. For example, the explanation to the issues in Chapter 9.2 (discussed next) states[294]:

> It must be recognised that land zoned for urban development will undergo significant and permanent change. Some modification of the natural environment, including vegetation clearance and earthworks, is inevitable in implementing the urban development envisaged by the zoning of the land.

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292 Policy 3 to objective 8.3.2 [NSCC District Plan p. 8-9].
293 Policies 6 and 7 to objective 8.3.2 [NSCC District Plan p. 8-9].
294 NSCC District Plan p. 9-2.

Accordingly we hold this must be qualified so as to refer to 'significant or potentially significant ecosystems and habitats' and avoiding "adverse" effects.

[180] The second ecological policy is a stormwater policy which reads:

> 7. By requiring maximum on-site absorption and vegetation filters to protect receiving waters from adverse effects of stormwater flows affecting ecosystems and habitats
>
> ...

Landscape, Landforms, Geological Features and Views

[181] The general objective on these subjects is[295]:

> To recognise and protect those areas which make a significant contribution to the landscape character, sense of identity, or geological history of the city.

Its relevant implementing policies are:

> **Policies**
>
> ...
>
> 4. By controlling buildings and development adjacent to the coast, ... to protect the natural configuration of the coast ... and to protect the natural character of the ... area...
> 5. By requiring landscaping to be undertaken as part of development in order to retain and enhance some element of natural landscape character.
>
> ...

Stream protection

[182] The objective on 'Stream Protection"[296] under the heading Stormwater Catchment Management is again in strong and unqualified terms. It is "To protect and enhance the natural character and ecological amenity and recreational value of rivers, streams and other natural bodies of water". There are no less than 12 implementing policies:

295 Objective 8.3.3 [NSCC District Plan p. 8-11].
296 Objective 8.3.5 [NSCC District Plan p. 8-15].

Policies

1. By **maintaining and enhancing** native vegetated buffers adjacent to waterways to avoid or mitigate the effects of surface erosion, stormwater contamination, bank erosion and increased surface water temperature.
2. By **requiring** revegetation and **avoiding** impermeable surfaces and earthworks within the margins of waterways.
3. By **enhancing** the margins of waterways in terms of their natural, ecological, amenity, and public access values.
4. By **maintaining and enhancing** the biodiversity, resilience and integrity (including linkages to other ecosystems) of aquatic and riparian ecosystems.
5. By **retaining** natural open waterway systems for stormwater run-off, to the greatest extent possible, unless adequate maintenance is not feasible or there is a threat to life and property.
6. By **avoiding modification** to the structure and form of natural waterways such as avoiding the use of culverts and the piping of streams.
7. By **protecting and enhancing** natural open waterways as habitats for fish, plant and other aquatic species, particularly in sensitive catchments with high ecological values.
8. By **maintaining and enhancing** the aesthetic or landscape or natural character values of waterways.
9. By **avoiding** buildings and structures in proximity to waterway margins.
10. By **acquiring land, or protecting land** through the use of easements or covenants, alongside rivers, including streams, for public access where appropriate and for water quality, ecological and landscape protection purposes.
11. By ensuring that where practicable, streams, rivers and wetlands are protected in advance of development in the catchment.
12. By **avoiding** the situation where stormwater run-off from new development exceeds the downstream ability to accept the water without an increase in downstream flooding or channel erosion.

[emphasis added]

As the emphasised words demonstrate, there is a strong theme of protection in all these policies.

Stormwater control

[183] Another relevant stormwater catchment management objective and its policies are[297]:

297 Objective 8.3.5(2) [NSCC District Plan p. 8-16].

Objective: Stormwater Control

To adopt a comprehensive approach to river and stream system management and avoid, remedy or mitigate stormwater contaminants and sediment discharge from land-based activities and to protect the integrity of flood plains.

This time there are 14 relevant policies giving detailed prescriptions as to stormwater control. Obviously this is not an issue the City Plan wishes to leave entirely to the Regional Council. We also record that the explanation and reasons for those objectives and policies specifically identify the Long Bay catchment as a[298] "... particularly sensitive catchment with high ecological value that require[s] greater protection from the adverse effects of stormwater ...".

Subdivision and Development (Chapter 9)

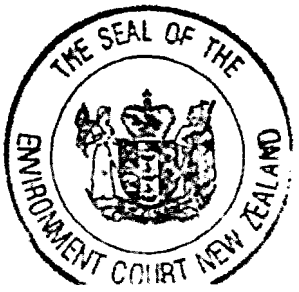
[184] There are three relevant objectives and related sets of policies. The first - given considerable emphasis by the City Council - relates to 'Protection of the Environment'[299]:

Objective

To avoid, remedy or mitigate the adverse effects of subdivision and development on the environment, including the physical environment, biota, amenity values and landscape.

Policies

1. By retaining significant landscape features, vegetation and wildlife habitats as they provide amenity value, diversity in the landscape and habitat.
2. By ensuring that soil/sediment run-off resulting from vegetation clearance and earthworks is controlled in order to avoid, remedy or mitigate adverse effects on amenity and habitat.
3. By ensuring that new subdivision and development recognises existing natural features and landscapes and that the form of development reflects the character and environmental qualities of the location.
4. By ensuring that new subdivision and development recognises, and is compatible with, the character and amenity values of existing development.
5. By ensuring that subdivision and development is designed and located such that it does not cause or contribute to, and/or be significantly affected by, natural hazards such as flooding, subsidence and erosion.



298 NSCC District Plan pp. 8-17 and 8-18.

299 Objective 9.3.1 [NSCC District Plan p. 9-3].

6. By ensuring the integrated management of resources by requiring that land use and development avoid, remedy or mitigate any adverse effects on natural and physical resources which manifest themselves within or beyond the immediate location and across jurisdictional boundaries.

[185] The second objective relates to 'Well-being, Health and Safety' and is at the heart of the Landco case[300] on the City Plan. It is:

> **Objective**
> To ensure that new subdivision and development enables people and communities to provide for their well-being health and safety.

The related policies are not nearly so wide. They state:

> **Policies**
> 1. By ensuring that the design and construction of subdivision results in the provision of:
> (a) Safe and stable building platforms and vehicle access without the need for extensive additional site works.
> (b) Roads (including footpaths) and privateways with a vertical/horizontal alignment and width that allows the safe and convenient movement of pedestrians, motor vehicles and cyclists.
> (c) Utility services that have sufficient capacity to absorb the effects of development and maintain human health and safety.

[186] The third objective and its relevant policies come under the heading "Servicing Development'. The objective is[301]:

> To ensure that the servicing of new development is planned and implemented in an efficient manner and such as to avoid or mitigate any adverse environmental effects.

The related policies give details of the obligations on developers to provide *(inter alia)* services, reserve contributions, esplanade reserves etc.

[187] Despite the apparent breadth of the objectives we hold that Chapter 9 is relatively restricted in scope, for three reasons. First, when reading Chapter 9 it is

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300 Mr A A Bradbourne, evidence-in-chief para 5.11 [Environment Court document 80].
301 Objective 9.3.3 [NSCC District Plan p. 9-6].

particularly important to identify its place in the City Plan, i.e. what it is about, and to read the City Plan as a whole: *J Rattray and Son Limited v Christchurch City Council*[302]. Then it becomes obvious that Chapter 9 is about subdivision and site development, not about development generally in the sense of activities which may be carried out on the site. We have two reasons for holding that:

(1) other chapters provide for zones, e.g. Chapter 15 (Business) and Chapter 16 (Residential) which contain their own 'development' objectives and policies permitting the activities their titles suggest;

(2) most of the subdivision and development policies in Chapter 9 relate to site works.

Secondly, the Introduction to Chapter 9 states:

> This section of the Plan is concerned with managing the effects which arise from subdivision and development including site works.

Thirdly, the statement of issues in Chapter 9 refers to 'site development' and the issues are specifically identified[303] as relating "... to the subdivision of land and the site works necessary for development". Therefore we consider that objectives 9.3.1 to 9.3.3 should be read as if (in most contexts - and certainly in objective 9.3.2) the word 'development' is qualified by the word 'site' so that the references are to 'site development'. It is important in the scheme of the City Plan that those objectives should be confined to their subject and not read more widely as referring to the activities that may subsequently be 'developed' on the site. The latter are managed under other chapters in the City Plan.

Cultural Heritage (Chapter 11)

[188] The cultural heritage objective and policies include (relevantly) a general objective[304] to identify and protect archaeological sites within the city. Despite the unqualified nature of that objective the relevant policy gives no strength to its

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302 [1983] 10 NZTPA 59 at 61.
303 Chapter 9, para 9.2 [City Plan, Volume 2 p. 9-1].
304 Objective 11.3.2 [NSCC District Plan p. 11-4].

implementation since it merely requires[305] 'archaeological investigation of any land proposed to receive urban zonings'. A further objective with regard to Maori traditional sites effectively repeats, and thus gives further emphasis to, the objective in Chapter 7. However, the policy is more focussed[306] in that it goes beyond identification of significant sites, and requires their protection and preservation.

Transportation (Chapter 12)

[189] The relevant transportation objective and policies on Transport System Effectiveness and Safety state[307] a general list of desiderata as outcomes for a transport system. The objective can be summarized as managing adverse effects (noise, stormwater run-off and air quality) on the environment, open space and "street"' amenities while securing the "enabling" components of section 5 of the RMA. Relevant policies are variously concerned with maintaining a balance between trip generation and network capacity at local and sub-regional levels; encouraging fuel efficient and "less" polluting travel modes; and managing the adverse effects of transport infrastructure on visual amenities and receiving water quality. Policies are included to implement a passenger transport objective, and similarly for provision of cycleways and walkways[308].

Business (Chapter 15) and Residential (Chapter 16)

[190] For the most part these chapters do not apply until land is zoned 'Business' or 'Residential' respectively. However in view of Landco's emphasis on providing a supermarket in the village centre we record several relevant business policies about the allocation of retailing in case they are relevant. First, 'Business Development' policy 15.3.1(7) seeks to[309]:

> ... ensur[e] that new business development does not result in adverse social and economic effects by causing a decline in amenity in existing centres or [in] the positive contribution made by existing shopping centres to the social and economic wellbeing of people and communities in the City.

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305 Objective 11.3.2, policy 2 [NSCC District Plan p. 11-4].
306 Policy to objective 11.3.3 [NSCC District Plan p. 11-5].
307 Objective 12.3.1 [NSCC District Plan p. 12-4].
308 Objective 12.3.3 [NSCC District Plan p. 12-10].
309 City Plan June 2002 reprint p. 15-4.

[191] Secondly the objective for 'Retail Activities' is to be implemented by policy 15.3.3(1) which[310]:

> ... encourag[es] retail activities to locate in the existing and proposed business centres in the city, which include:
>
> a) sub-regional centres at Takapuna and Albany,
> b) Suburban centres ...,
> c) Local centres distributed throughout the city;
>
> and in the General Business zones where appropriate.

[192] Also retail policy (4) might apply. It seeks[311]:

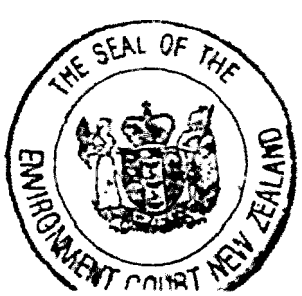
> ... [to] recognis[e] the potential demand for some retail activity to establish in business zones outside the existing and proposed business centres and requiring this development, (in the Sub-regional 6, Business Park 7, Business Special 8, General 9 and General 10 zones) unless otherwise exempted, to be subject to a thorough evaluation, particularly in terms of the effects of the activity on:
>
> - the roading network in which the activity is located; and
> - the amenity values of nearby residential areas; and
> - the character, heritage, and amenity values of the centres; and
> - the overall accessibility to the range of business and community facilities in the city; and
> - the pedestrian amenity in the vicinity of the proposed retail activity.

This last policy appears to apply after a decision has been made to rezone land (as one of the zones identified in brackets) whereas in these proceedings we are still establishing working zones within the LBSP area.

2.5 Urban Expansion (Chapter 17)

2.51 The objectives and policies for urban expansion

[193] The LBSPA is zoned "Residential Expansion" and is therefore to be managed under Chapter 17. This chapter contains relevant objectives and policies about the mechanisms for writing, and the substantive contents of, structure plans to achieve that



310 City Plan June 2002 reprint p. 15-7.
311 City Plan June 2002 reprint p. 15-7.

expansion. This chapter was given surprisingly little emphasis or comment by Landco witnesses. It was discussed in much more detail by other parties' witnesses.

[194] The Residential Expansion Zone's own objective 17.4.1 is[312]:

> To enable the extension of the urban area to occur in a manner that responds to the environmental constraints and opportunities associated with the land and enables the efficient use of natural and physical resources.

In view of the reference in that objective to 'environmental constraints' we should record at this point that Landco's submissions and evidence were critical[313] of the 'constraints-based' approach, as they described it, of the North Shore City Council and other parties. That approach was contrasted with the opportunities[314]/balancing use management espoused by Landco. We were rather puzzled by the Landco approach for two reasons. First, the most obviously relevant and important procedural objective in the proceeding is objective 17.4.1 just quoted, and that expressly starts with identification of constraints. Secondly, if one looks at the matters identified in sections 74 and 75 with which our decision must accord or comply, it is quite clear that we are constrained by both the higher tier objectives and policies in the City Plan and ultimately by the principles and purpose of the Act as well as by the various regional instruments.

[195] We have considered whether the second half of the objective adds anything to section 7(b) of the RMA because it largely uses the same words as that section. The only extra factor in the objective which is not found in section 7(b) is the word 'enabling'. We infer that the NSCC is encouraging efficiency rather than stating that parties should say how it is to be achieved.

[196] The relevant Residential Expansion policies setting out the relevant procedure to implement that objective are[315]:

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312 NSCC District Plan p. 17-3.
313 Mr Galbraith QC, closing submissions para 6.56 [Environment Court document 87].
314 Mr Galbraith QC, closing submissions pp 13-22 [Environment Court document 87].
315 Policies to objective 17.4.1 (Residential Expansion Zone) [NSCC District Plan pp. 17-3 and 17-4].

2. By not providing for subdivision until a Structure Plan has been completed for the land.
3. By utilising a structure planning process to achieve a comprehensive and environmentally responsive approach to development

…

7. By incorporating the essential components of the completed Structure Plan into the District Plan by a Change to the Plan.
8. By requiring that every Structure Plan comprises two parts, being:
   (a) A Land Analysis Background Report which provides a comprehensive analysis of the land's physical, environmental, cultural and landscape features.
   (b) A Development Concept which directly relates to the findings of the Land Analysis Background Report.

   ...

A large number of reports constituting a Land Analysis Background Report were prepared for the NSCC[316]. They have been superseded for our purposes by the evidence we read and heard. Other relevant and important policies are discussed later in this decision.

2.52 The design principles

[197] Under the heading '17.5 Methods: Structure Plans' there are two sets of Design Principles[317]: a general set, and one specifically for a Long Bay Structure Plan. These are so clearly important we will not quote them here because we have to go through them individually later.

[198] For the most part the design principles address the matters of sustainable management which are also stated more generally in section 5(2)(a), (b), and (c) and sections 6 and 7 of the RMA. There are a few which relate to health and safety (see 'Roading', Principle 17.5.5), and only one that directly refers to shops and business. The latter is under 'Identity' and is a general principle to 'enabl[e] the grouping together of ... local shops and small scale business areas to create a sense of place or identity'. We also conclude that any tension between 'conservation' objectives and 'development' objectives visible at the higher tiers in the City Plan has been resolved for the LBSP area in favour of the former. Finally we find no inconsistency in the design principles.

316 Mr S K Brown, evidence-in-chief para 2.10 [Environment Court document 5].
317 Para 17.5.5 Design Principles [NSCC District Plan p. 17-9].

[199] Mr Bradbourne, a planning witness for Landco, wrote that the design principles are categorised as methods (which is correct). He then asserted in relation to the 'minimal earthworks' principle that[318] "... the method should be considered, there is no presumption that you should use minimal earthworks". We have two difficulties with his approach. First we consider that it weakens the effect of the design principles. We hold that the principles are analogous with (subordinate) policies in the sense that they indicate how higher-tiered objectives and policies are to be achieved. Secondly the specific principle which we assume he is referring to actually requires "... a level of earthworks which will have minimum impact on the environment" which is rather different.

2.53 The place of the design principles in the City Plan's scheme

[200] We hold that the 'design principles' in paragraphs 17.5.5 and 17.5.6 are in effect a fourth tier of policies which are to be implemented in the preparation of structure plans. If the principles are sufficiently precise and unambiguous, and achieve one (or more) of the higher-ranking objectives and policies - and there are so many in the NSCC plan it is unlikely they would not - then there is no need to seek guidance from the higher-level objectives and policies. As the Planning Tribunal stated in *NZ Rail v Marlborough District Council*[319]*:*

> ... where there are relevant general objectives and policies that might be thought to be in conflict with more specific relevant objectives and policies, we take the view that for the purposes of s 105(2)(b)(ii) of the Act it is the latter that should be regarded as being applicable, otherwise absurd results could follow. A general objective and policy could be read as precluding a development referred to in a more specific objective and policy.

That statement was made in the context of a section 120 appeal on a resource consent, but the same principle usually applies when considering methods or rules for a structure plan in the absence of ambiguity in, or conflict between, specific policies at the same level. The reason for the interpretative principle is that the lower level principles are deemed to have subsumed or particularised the higher objectives. The position may be

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318 Mr A A Bradbourne, evidence-in-chief para 5.48 [Environment Court document 80].

319 [1993] 2 NZRMA 449 at 460.

different when the structure plan principles are ambiguous, incomplete or inconsistent, or when a plan change seeks not only to create a structure plan but also to amend both the objectives it is to achieve, and those which guide its implementation. Another possible, but less likely, interpretation of Chapter 17 is that the design principles are merely methods to be had regard to, but which can be rejected. If that is so, then the *NZ Rail* principle applies again, but this time with the Tier 3 objectives and policies guiding any development under a structure plan, and in cases of ambiguity or conflict, the issue should be moved up to Tier 2 and, if necessary, to the goals in Tier 1.

[201] A further complication is that it is not immediately obvious which are the applicable Tier 3 objectives and policies. Each of Chapters 7 to 19 (excluding Chapters 17 and 17A) are written as if they apply in part when deciding to zone land for various activities, and partly as if they manage activities when land is rezoned. The proportions of objectives and policies in each category vary from chapter to chapter. It is all a matter of context in the circumstances, which is one of the reasons we have had to quote so much from the district plan and the proposed changes to it.

2.54 Subsequent subdivision, site development and activities in the LBSPA

[202] Chapter 17 has been exercised twice with the completion of structure plans for two other areas in the City - Albany and Greenhithe. Two plan changes have resulted in a new Chapter 17A containing those structure plans, and providing for new objectives, policies, zones and rules. Similarly Plan Change 6 and Landco's proposed amendments both not only contain structure plans for the LBSP area, but also propose (as we have said) to create new, parallel objectives and policies in a new Chapter 17B and in a new Chapter 9A.

[203] We will consider the proposed new Chapters 9A and 17B later, but should explain that in our view they are intended to operate once the structure plan is in place. In other words those chapters - with the exception of their general strategies[320] - are not to be considered when assessing the proposed structure plans but are to be examined (later) to see whether they implement the structure plan strategy (or general objective)

[320] Found in paragraph 17B.1.3 in both structure plans (the Yellow Book) [Environment Court document 1A].

and related map. That is an important point because many of the ecological witnesses (e.g. Ms Flynn for the NSCC and Drs Gardner and Donovan for Landco) assessed the performance of the proposed structure plans against the proposed new Chapters 9A and 17B. We consider that approach is wrong. The structure plan - which as we shall see includes a 'land use strategy' - comes first and then any necessary and appropriate new objectives, policies and rules must be prepared (under the statutory tests we have outlined) to implement the structure plan.

2.6 Other Statutes

2.61 The Hauraki Gulf Marine Park Act 2000

[204] The Hauraki Gulf Marine Park Act 2000 states its purpose as being to:

> ... integrate management of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments[321].

The word "catchment" is defined[322] to mean:

> ... any area of land where the surface water drains into the Hauraki Gulf.

That brings the Long Bay Structure Plan area within the area to be managed under the HGMPA.

[205] Sections 7 and 8 of the Hauraki Gulf Marine Park Act recognise the significance of the Hauraki Gulf, its islands and catchments, along with setting out the objectives for their management.

> **7 Recognition of national significance of Hauraki Gulf**
>
> (1) The interrelationship between the Hauraki Gulf, its islands, and catchments and the ability of that interrelationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands are matters of national significance.
>
> (2) The life-supporting capacity of the environment of the Gulf and its islands includes the capacity -
>
> (a) to provide for -

321 Section 3 HGMPA.
322 Section 2 HGMPA.

(i) the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and its islands; and

(ii) the social, economic, recreational, and cultural wellbeing of people and communities;

(b) to use the resources of the Gulf by the people and communities of the Gulf and New Zealand for economic activities and recreation; and

(c) to maintain the soil, air, water, and ecosystems of the Gulf.

8. Management of Hauraki Gulf

To recognise the national significance of the Hauraki Gulf, its islands, and catchments, the objectives of the management of the Hauraki Gulf, its islands, and catchments are-

(a) the protection and, where appropriate, the enhancement of the life-supporting capacity of the environment of the Hauraki Gulf, its islands, and catchments;

(b) the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments;

(c) the protection and, where appropriate, the enhancement of those natural, historic, and physical resources (including kaimoana) of the Hauraki Gulf, its islands, and catchments with which tangata whenua have an historic, traditional, cultural, and spiritual relationship;

(d) the protection of the cultural and historic associations of people and communities in and around the Hauraki Gulf with its natural, historic, and physical resources;

(e) the maintenance and, where appropriate, the enhancement of the contribution of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments to the social and economic well-being of the people and communities of the Hauraki Gulf and New Zealand;

(f) the maintenance and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments, which contribute to the recreation and enjoyment of the Hauraki Gulf for the people and communities of the Hauraki Gulf and New Zealand.

With reference to some of the matters set out above, the Environment Court accepted in *Whangapoua Environmental Protection Society Incorporated v Thames-Coromandel District Council* that the Hauraki Gulf Marine Park Act has "a broader purpose than the RMA"[323]. The level of emphasis on recreational values, set out in sections 7(2) and 8(e) and (f) is especially notable, mandating that recreational values be afforded significantly greater consideration than the RMA would otherwise require.

[323] Decision A117/05 at para 156.

[206] An aspect of section 8 that concerns us is the potentially strong tension between section 8(a) to (d) and (f) on the one hand, and section 8(e) on the other. Consider a (hypothetical) proposal to use the sheltered waters south of Waiheke Island to create a new international port, where the objectives in section 8 work against each other: the objective of enhancing the contribution of the natural resources to economic and social wellbeing may be completely at odds with the other objectives in section 8 HGMPA.

[207] Sections 9 and 10 of the HGMPA set out the interrelationship between the RMA and the Hauraki Gulf Marine Park Act. They state (relevantly):

> **9. Relationship of Act with Resource Management Act 1991**
>
> …
>
> (3) A territorial authority must ensure that any part of a district plan that applies to the Hauraki Gulf, its islands, and catchments, does not conflict with sections 7 and 8 of this Act.
>
> …
>
> (5) The provisions of section 55 of the Resource Management Act 1991 apply as though sections 7 and 8 of this Act were a national policy statement and a regional council or a territorial authority must take action in accordance with that section and notify a change to a regional policy statement, plan, or proposed plan within 5 years of the date of commencement of this Act.
>
> **10. Creation of New Zealand Coastal Policy Statement by this Act**
>
> (1) For the coastal environment of the Hauraki Gulf, sections 7 and 8 of this Act must be treated as a New Zealand coastal policy statement issued under the Resource Management Act 1991.
>
> (2) For the coastal environment of the Hauraki Gulf, if there is a conflict between sections 7 and 8 of this Act and the provisions of any New Zealand coastal policy statement issued under the Resource Management Act 1991, the New Zealand coastal policy statement prevails.
>
> (3) The provisions of section 55 of the Resource Management Act 1991 apply to the New Zealand coastal policy statement created by this section and a regional council or a territorial authority must take action in accordance with that section and notify a change to a regional policy statement, plan, or proposed plan within 5 years of the date of commencement of this Act.

So from 1 August 2003 District Plans[324] have been required by the RMA to "give effect to" New Zealand Coastal Policy Statements. The North Shore City District Plan must therefore recognise the national significance of the environment of the Hauraki Gulf by giving effect to the objectives set out in section 8 as they relate to the social, economic, recreational and cultural values of the Gulf unless there is a conflict[325] with the NZCPS.

[208] While recognising the effect of obligations in the HGMPA, especially to maintain and enhance the recreational, cultural and historic values of Long Bay, we have to say that overall the HGMPA itself is not of much assistance for three reasons. First, we respectfully agree with the Environment Court in *The Auckland Volcanic Cones Society Incorporated and Ors v Transit New Zealand*[326] when it stated:

> Indeed if the [HGMPA] merely constitutes ... [another] national policy statement, then in our opinion that is a downgrading of the values of the RMA and shows the danger of endeavouring to graft local legislation onto legislation addressing matters of New Zealand wide importance.

Second, its broad and qualified statements merely confuse the relatively more logical structure of the RMA (which already contains quite enough general principles - 'verging in places on turgidity'[327]). Third, we have drawn attention to the way in which section 8(b) - (d) and (f) may work against section 8(e) of the HGMPA (and vice versa). This point suggests that the HGMPA may indeed conflict with the New Zealand Coastal Policy Statement ("NZCPS") as section 10(2) of the HGMPA contemplates. In particular NZCPS policies 1.1.1 to 1.1.5 discussed below do not contain the internal contradiction that section 8 of the HGMPA does. We therefore find it more useful to consider and apply the NZCPS.

[209] Section 9 of the HGMPA - quoted above - required local authorities to notify changes to RMA documents within five years of the commencement of the HGMPA. Proposed Change 9 - "Reference to the Hauraki Gulf Marine Park Act 2000" - to the RPS is, as its name suggests, designed to implement the HGMPA and we discuss that

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324 Section 73(2) RMA as amended by the Resource Management Amendment Act 2003.
325 Section 10(2) HGMPA.
326 [2003] NZRMA 54 at para [171].
327 Per Cooke P (as he then was) in *Auckland Regional Council v North Shore City* [1995] NZRMA 424 at 427.

shortly. We are not aware of any equivalent change to the district plan to implement the HGMPA.

2.62 The Local Government (Auckland) Amendment Act 2004

[210] Because Parliament also perceived a lack of co-ordination between existing land transport systems and land uses in the Auckland region it passed the Local Government (Auckland) Amendment Act 2004. The purpose of the LGAAA 2004 and therefore of any statutory document under it is to integrate land transport and land use provisions and to make them consistent with the Auckland Regional Growth Strategy[328]. To ensure that the purpose is not ignored section 39(1) of the LGAAA 2004 requires that each Auckland local authority must, by 31 March 2005, prepare and publicly notify proposed land transport and land use changes to its Auckland planning documents.

[211] Section 40 of the LGAAA 2004 then describes the purpose and contents of any (such) changes as follows:

> A land transport and land use change is a change or variation to an Auckland planning document by including issues, objectives, policies, and descriptions of methods for the purpose of -
>
> (a) giving effect, in an integrated manner, to the growth concept in the Auckland Regional Growth Strategy prepared under section 37SE of the Local Government Act 1974; and
>
> (b) contributing, in an integrated manner, to the matters specified in Schedule 5 [e.g. and, most relevantly, 'supporting compact sustainable urban form ...'.

We have two observations about the LGAAA and its effects on district plans. First it is silent about the relationship of other territorial authority plan changes to the plan changes it contemplates. Secondly the LGAAA 2004 does not state any new principle which a local authority (and on appeal this Court) must consider. It does not even state that local authorities shall give effect to the Regional Growth Strategy ('the ARGS'). Its operation is at a further remove again. It requires local authorities by 31 March 2005 to notify '... land use changes' to give effect to the ARGS. Therefore we do not need to consider the LGAAA itself any further. We will consider the ARGS in the next section of this decision.

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328 Section 3 of the LGAAA 2004.

2.63 Marine Reserves Act 1971

[212] We have explained that the Long Bay Marine reserve is a close neighbour of the LBSPA. While we consider the possible effects of the structure plans in the marine reserve below, we do not find the Marine Reserves Act 1971 itself to be of much assistance beyond recording its general purpose:

> ... of preserving, as marine reserves for the scientific study of marine life, areas of New Zealand that contain ... natural features, or marine life, of such distinctive quality, or so typical, or beautiful, or unique, that their continued preservation is in the national interest.

2.7 Regional Instruments

[213] The relevant regional instruments are[329]:

- the Regional Growth Strategy
- the Regional Policy Statement
- the proposed Changes 6, 8, 9 and 10 to the Regional Policy Statement
- the operative Coastal Plan
- the operative Sediment Plan
- the proposed Air, Land, Water Plan.

2.71 Regional Growth Strategy

[214] The ARGS was required under section 37SE of the Local Government Act 1974, so it is not a statutory instrument under the RMA. That means it has not been subjected to critical analysis under section 32 of the RMA, or the RMA generally, with the consequence that it suffers from a lack of clarity (at least in the opinion of one of the Court's members). For example[330]:

> The Growth Concept emphasises the opportunities for more compact growth and integrated communities as the best way of meeting the regional vision and desired outcomes.

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329 See Mr D Mead's 'Attachments' Tab 3.
330 ARGS p.28.

Despite that, the ARGS has been elevated as a result of the LGAAA 2004 which directs that it is to be implemented in 'planning documents'[331]. As we have seen the NSCC has commenced giving effect to it in the NSCC district plan by pursuing Plan Change 12 and 'Variation 1' to Plan Change 2. In the meantime we consider we may look at the ARGS as providing evidence of the aspirations of the region particularly since the strategy was prepared by the 'Regional Growth Forum' which includes both the ARC and the NSCC.

[215] The ARGS is dated November 1999 so it is now over eight years old. It identifies "Long Bay" as a 'future urban area' within which is proposed an 'intensive centre'. It sets 'capacity targets' for regional growth (targets are given in population and in households). Mr C M Shearer, a resource management consultant called by Landco, conveniently summarised the aim of the ARGS in his Table 1 which we reproduce here[332]:

Table 1: Population/Dwelling Density information - Auckland Metropolitan Area

Year	1996	2050 – Projected
Population	1,066,000[333]	1,956,000[334]
Dwellings	356,000[335]	686,000
Household – occupancy rate/dwelling	3.0	2.85[336]
MUL area – hectares	50,000	55,000[337]
Dwelling density/hectare	7.1	12.5

It will be seen that the population of the metropolitan area is projected to double from one to two million by 2050.

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331 Sections 39 and 40 of the LGAA4 2004.
332 Adding his asterisked notes as the next four footnotes.
333 RGS, Table 5 p. 30.
334 RGS, Table 5 p. 30
335 RGS, p. 15.
336 RGS, p. 15: "700,000 dwellings will be required ... to house ... 2 million people = 2.85 ppd.
337 RGS, p. 3: 'metropolitan area will increase by 10%, or 5,000 ha ...".

[216] In relation to the space needed for that increase Mr Shearer[338]:

> Note[d] that the gross dwelling density per hectare in the metropolitan area in 1996 was 7.1, with the aim of achieving 12.5 by 2050. The dilemma facing the region at that time was that if this density rate continued, for the projected 890,000 additional people by 2050 to be accommodated, the additional 330,000 dwellings would need 46,500 hectares of urban land to accommodate them.
>
> This would essentially have doubled the size of the metropolitan area from its then current size. The policy response in the RPS and the RGS was to promote a "compact" city based on intensification nodes and efficient use of land.

[217] The situation in 2006 was that the rate of population growth had increased at a faster pace than anticipated in 1999. The 'decisions version' of Proposed Change 6 to the ARPS (which we discuss next) predicts[339] the population of the region will be 2.1 million by 2046.

2.72 Auckland Regional Policy Statement

[218] The Auckland RPS became operative on 31 August 1999. Under the RMA in its pre-2005 form a plan change on a district plan must be merely 'not inconsistent with'[340] such a regional policy statement. Since the RPS' strategic objectives seek multiple and inconsistent outcomes (albeit with slightly stronger and more directions in favour of protection, maintenance and enhancement of what Landco's counsel have called the 'natural environment'[341]) we find that neither of the proposed structure plans nor any of the amendments sought by other parties is inconsistent with the RPS. With one exception none of the parties' witnesses alleged that either of the structure plans considered at the hearing was inconsistent with the operative RPS. We consider the evidence of the exception Mr Bradbourne, one of the planners called by Landco, in Part 4.0 of this decision.

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338 Mr C M Shearer, paras 2.8 and 2.9 [Environment Court document 78].
339 Change 6 to the ARPS [Decisions version 31 July 2007, p. 2-6].
340 Section 75(2)(b) of the (post-2005) RMA.
341 See the Strategic Objectives at para 2.5.1 of the RPS [RPS p. 2/15].

2.73 Proposed changes to the Regional Policy Statement

[219] More relevant to these proceedings is that we must have regard to the proposed RPS constituted by the various proposed changes to the operative RPS. The operative RPS was, at the end of the hearing, subject to four proposed changes:

Number	Title	Date of notification or decision
Change 6	'Giving Effect to the Regional Growth Concept and Integrating Landuse and Transport'	August 2007 (Decisions version)
Change 8	'Volcanic Features and Landscape'	26 September 2005 (Notified version)
Change 9	'Reference to the Hauraki Gulf Marine Park Act 2000'	February 2007 (Decisions version)
Change 10	'Natural Hazards'	February 2007 (Decisions version)

[220] To understand how the various proposed changes are intended to work we record that the RPS contains 18 chapters[342], including relevantly (with those proposed to be amended by Changes 6, 8, 9, and 10 emphasised and identified):

1. **Introduction (C6)**
2. **Regional Overview and Strategic Direction (C6)**
3. **Matters of significant to iwi (C9)**
4. **Transport (C6)**
5. Energy
6. **Heritage (C8)**
7. **Coastal Environment (C8, C9)**
8. **Water Quality (C9)**

…

11. Natural Hazards (C10)

[342] Plus chapters 19 (Appendices) and 20 (Notes).

...

18. Esplanade Reserves and Strips

The proposed changes conveniently follow the same order as the chapters in the RPS so we can follow them through in both chrono- and logical order.

Change 6 to the ARPS

[221] Since there is confusion in the proposed NSCC district plan as to the meaning of certain terms, we should point out that they are defined in the proposed ARPS. Appendix D to the ARPS is amended by the decisions on Change 6 by the insertion of these relevant definitions:

Future Urban Areas

means those areas identified in Schedule 1B for the expansion of urban development. It also includes areas identified through successful requests to move the metropolitan urban limits and the urban areas of rural and coastal settlements where they do not have an operative urban zone.

High Density Centres and Corridors

means specific localities selected for urban intensification due to physical or locational characteristics that include the intensity of existing development, the locality's generation of, or association with, significant transport movements and/or passenger transport nodes, and the locality's capacity for further growth. These localities include the CBD, sub regional centres, town centres, and corridors earmarked for higher density development. High Density Centres and corridors are identified in Schedule 1.

...

Sub Regional Centre

means a prominent urban area which is characterised by a diverse mix of functions including intensive retail, residential, community and business activities. Sub Regional centres are usually of a larger scale and higher density than town centres. They may also contain higher order **activities such as major public transport ~~hubs~~ nodes, tertiary level health and education facilities** and other significant tourist, and entertainment facilities. Sub Regional centres are usually the geographical 'heart' of a wider urban community. It gives the wider urban area an identity and a significant community focal point. A sub regional centre is generally defined as the area within an 800m radius, or a 10 minutes walk; of its centre.

Town Centre

means an urban area characterised by a mixture of functions including intensive retail, residential, community and business activities. Town centres give the local area and community much of its identity. Town centres differ from pure retail centres and business parks which tend to be dominated by single use activities. A town centre is generally defined as the area within a 400 - 800m radius, or a 5 to 10 minute walk, of its centre.

Chapter 2: Regional Overview and Strategic Direction

[222] Unlike the North Shore City Plan, the RPS itself is not particularly hierarchical. Para 2.6 (Strategic Direction) contains a sentence that 'These objectives and policies are to be considered in conjunction with the objectives and policies in other chapters of the RPS'. That is, specific objectives and policies - wherever found - usually have equal weight even if initially the latter are intended to implement the chapter 2 objectives and policies. Perhaps all that sentence means is that in the event of conflict or inconsistency at any given level of objectives and policies, one does not automatically defer to the higher level of objectives and policies which (may) resolve the issue.

[223] Change 6 proposes to replace Chapter 2 of the RPS completely. The relevant strategic objectives are[343]:

1. To ensure that provision is made to accommodate the Region's growth in a manner which gives effect to the purposes and principles of the Resource Management Act 1991 and Section 40 of the Local Government (Auckland) Amendment Act 2004, and is consistent with these Strategic objectives and with the provisions of this RPS.
2. To maintain and enhance the overall quality of the environment of the Auckland Region, within and outside the urban area, including its unique maritime setting, volcanic features, significant landscapes, cultural and natural heritage values, and public open space.
3. To achieve a compact well designed more sustainable urban form served by an integrated multimodal (private vehicles, public transport, walking and cycling) transport system.
4. To develop and manage the region's transport system including road, rail, ferry, bus, cycling and pedestrian networks and services in a manner that supports urban development and land use intensification.

343 Change 6 to the ARPS [Decisions version, 31 July 2007 pp. 2-22 and 2-23].

5. To achieve a built environment within the region's metropolitan area and rural and coastal settlements that has a sense of identity and character, has a range of densities and uses, maintains or enhances its amenity values, and is visually pleasant, functionally efficient, environmentally sustainable and economically vibrant.
6. To achieve a high level of mobility and accessibility within the Region that provides for an integrated, responsive, sustainable, safe, affordable and efficient movement of goods and people.

...

9. To preserve the natural character of the coastal environment, whilst ensuring that the use of the coastal environment by those ... activities which serve the needs of the Region and which depend on a coastal location is appropriate and efficient.
10. To protect the intrinsic values of the Region's natural resource base, within and outside the urban area, and to make appropriate provision for the avoidance, remediation or mitigation of adverse effects on the Region's environment, including the identification of significant natural features and landscapes, and areas of significant indigenous vegetation and habitat, and protection of these from inappropriate subdivision use and development.
11. To encourage the efficient use of natural and physical resources, including urban land, infrastructure, and energy resources.
12. To preserve and protect a diverse and representative range of the Region's heritage resources.
13. To manage the Region's natural and physical resources in an integrated manner.
14. To involve the Tangata Whenua as kaitiaki of the Region's natural resources.
15. To improve the overall health, well being and quality of life of the people of the Region.
16. To enable the redevelopment, operation and maintenance of existing and provision of new regionally significant infrastructure.
17. To develop a network of high density centres and corridors as the focus for the region's growth.
18. To enable sustainable economic development to occur through business activities in appropriate locations throughout the region.

[224] Some of the objectives have a generality that makes them rather unhelpful (e.g. objectives 1, 11, 12, 13, 15). However, Landco relies on objective 11 which reads:

> To encourage the efficient use of ... resources, including urban land, infrastructure, and energy resources.

Unfortunately Landco's witnesses and counsel kept referring to 'efficiency' and only occasionally suggested what they meant by it (and then it was usually maximising yield

of residences). We will return to the subject of efficiency when we discuss the submissions on Part 2 of the RMA.

[225] The proposed RPS explains[344] that there are now six sets of strategic policies in Chapter 2 relating to:

- Urban Containment
- Urban Structure
- Urban Design
- Land use and Transport Integration
- Infrastructure
- Rural Areas

Urban containment

[226] The strategic policies[345], methods[346] and reasons[347] about urban containment and rural areas are irrelevant here because the Long Bay Structure Plan Area is within the 'Metropolitan Urban Limit' and not in a 'Rural Area' (defined[348] to mean those areas of the Region which are outside the MUL).

Urban structure

[227] The strategic policies[349] on urban structure are dealt with under four headings[350]:

- High Density Centres and Corridors;
- Future Urban Areas;
- Existing Urban Areas;
- Business Areas.

344 Immediately after Para 2.6.1 (Strategic Objectives) [PC6 Decision Version p. 2-26].
345 Para 2.6.2 of the RPS.
346 Para 2.6.3 of the RPS.
347 Para 2.6.4 of the RPS.
348 Appendix D to the RPS p. 43.
349 Para 2.5.
350 Para 2.6.5.

At first sight only the 'Future Urban Areas' policies are relevant in these proceedings since the LBSP area is identified in Change 6's proposed Schedule 1B as a 'future urban area ...' not as a High Density Centre (which is defined to include 'town centres').

[228] The policies for 'Future Urban Areas' include (relevantly) [351]:

> 8. The rezoning of future urban areas shall enable urban development and/or a subdivision pattern that maximises the efficient use of the land ... subject to consideration of environmental, economic and infrastructural capacity issues.

Landco put considerable emphasis on 'maximising the efficient use of land'. The ARC's submissions and several witnesses put some stress on the wording of policy 8 being 'subject to' environmental, economic and infrastructural capacity issues. In our view 'efficiency' can only be described meaningfully in relation to an objective (of which of course there are many candidates in these proceedings) or other legally relevant identified value, so Landco's general arguments about maximising efficiency are like arrows shot into the air. In any event we accept ARC's submission that, whatever 'efficiency' means, the words 'subject to' are a standard drafting device to show what is to be given greater weight in the event of a conflict: *Minister of Conservation v Kapiti Coast District Council*[352] referring to *Environmental Defence Society Incorporated v Mangonui District Council*[353]. We conclude that the efficient use of land is a subordinate policy where there are countervailing issues of the kind identified. Counsel for Landco did not attempt to deal with that argument in their reply.

[229] The last 'future urban area' policy is very obscure. It states:

> 10. When areas identified in Schedule 1B are rezoned for urban purposes provision will be made in selected locations for levels of urban development appropriate for town centre development, where the area to be rezoned is large enough to support town centre development. in such areas Policies 2.6.5.1 - 2.6.5.6 [which are concerned with high density centres and corridors] shall apply.

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351 Policy 2.6.5.
352 Decision A24/1994; (1993) 1B ELRNZ 234; [1994] NZRMA 385 at 388.
353 [1989] 3 NZLR 257; [1989] 13 NZTPA 197 (CA).

Landco relied on this policy quite forcefully. Mr Bradbourne opined and counsel submitted that the Long Bay Structure Plan area is large enough to support town centre development and therefore that should be provided for[354]

> ... the key point being that under the Landco SP the level of development necessarily reflects a town centre development'.

[230] Looking at the policy more closely we understand it to involve two steps: first carry out the rezoning exercise under all relevant objectives and policies for 'future urban areas' then, as a second step, if:

(a) the area rezoned for urban purposes is large enough to support a town centre;

(b) the area is then (indicated by 'will be made') selected as a suitable location;

- then the 'high density centres ...' policies will apply. We are still carrying out the first step. It is too soon to know whether the second step will be reached because it will not be known until this Court makes its decision whether the rezoned urban area will be large enough to support a town centre, and because the Regional Council has not yet made a selection. That means the High Density Centres and Corridors policies referred to in Landco's submissions and evidence, viz:

> **High Density Centres and Corridors**
>
> 1. Urban intensification is to occur in specified locations (including areas identified in Schedule 1A) to provide the focus for the Region's residential, commercial and retail growth.
> 2. A network of high density centres and corridors is developed which are linked by high quality public transport ranging from frequent local bus services supplemented by express buses to rapid transit (rail, ferry or bus) on separate rights-of-way.
>
> ...

- are not (yet) applicable. If we decide that enough land can be rezoned urban such that a town centre becomes theoretically possible, then it will be up to the ARC to decide

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[354] Mr A A Bradbourne, evidence-in-chief para 6.13 to 6.16 [Environment Court document 80].

whether to select the area as a possible town centre, and then the high density centres policies can be applied.

Urban Design

[231] Proposed Change 6 Para 2.6.8 Strategic Policies - Urban Design includes a general policy as to the design of future urban areas.

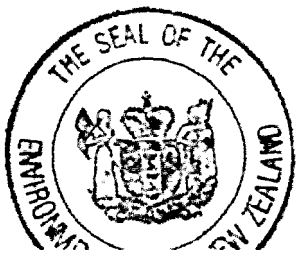
Land use and transportation

[232] Proposed Change 6 Para 2.6.11 Strategic Policies - Land Use and Transport Integration - repeats in more words what its title suggests.

Summary on Change 6

[233] We have read the evidence and cross-examination of all the resource management witnesses who considered change 6 to the proposed RPS. We consider the effect of Change 6 is fairly summed up by Mr Jarvis where he wrote[355]:

> In some regards, Change 6 can be said to elevate the importance of land use and transport integration, but it is evident that the provisions of Change 6 are equally concerned with achieving a high amenity environment as they are with concentrating growth in nodes. In my opinion, the objectives and policies of Change 6 make it clear that accommodating growth is critical, and when making decisions about urban development in Long Bay we are required to consider the regional context as well as the local (urban design) context.
>
> It is notable that Change 6 does not alter those provisions of the ARPS that require the maintenance, enhancement and protection of natural and cultural heritage values and that in Strategic Policy 2.6.5.8 the emphasis on maximising the "efficient use" of the land is "... subject to consideration of environmental and infrastructural issues". In other words, although Change 6 has strengthened the emphasis on land-use and transport integration found in the ARPS, it has not elevated it to a position of dominance over the other regional imperatives.



355 Mr H D Jarvis, evidence-in-chief paras 4.43 and 4.44 [Environment Court document 81].

Change 8: Volcanic Features and Landscape

[234] We must also have regard to Proposed RPS Change 8 (Volcanic Features and Landscape)[356], which seeks to amend Chapter 6 (Heritage) of the ARPS with various consequential changes, including to Chapter 7 (Coastal). The proposed change has progressed only to the point where submissions are being heard[357]. Those parts of Change 8 dealing with volcanoes are irrelevant so we do not refer to them again.

[235] The new objectives relating to landscapes are rather anodyne; more guidance is given in the policies discussed below. The only relevant objectives that add anything to section 6(b) of the RMA are[358]:

> 5. To maintain the overall quality and diversity of character and sense of place of the landscapes of the Auckland Region.
>
> ...
>
> 8. To manage heritage resources in an integrated way to ensure their contribution to the variety of heritage values is protected and enhanced.

[236] Before we turn to the policies we should explain that the new provisions introduced by Change 8 to the RPS contain, at least at first sight, a fairly standard tripartite division of the region's landscapes into:

- Outstanding Natural Landscapes ("ONL")[359]
- Highly Valued Landscapes ("HVL")[360]
- Other landscapes (by default).

The ONLs are identified by the ARC in map series 3a, introduced by Change 8. Sheet 2 shows the CMA south of Piripiri Point to Vaughans Stream as ONL number 54. A southern portion of Homestead Spur (called the 'Vaughans Escarpment') is included in the ONL. The HVL are not identified: that exercise is left to territorial authorities[361].

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356 Notified 26 September 2005.
357 Mr H D Jarvis, evidence-in-chief para 4.46 [Environment Court document 81]
358 Objective 6.3 [See Change 8 p. 6-7].
359 Policy 6.4.22(1) [Change 8 p. 6-11].
360 Policy 6.4.22(3) [Change 8 p. 6-11].
361 RPS Change 6 at p. 6-14.

[237] The first new and relevant policy expressly implementing the Change 8 objectives relates to the 'outstanding natural landscapes':

> Policy 6.4.22(1)
>
> Any subdivision, use and development in Outstanding Natural Landscapes identified in Map Series 3A shall ensure that high levels of naturalness are maintained and visually intrusive built elements or land uses are avoided.

[238] The next relevant proposed policy continues:

> Policy 6.4.22(2)
>
> Outstanding Natural Landscapes located in the coastal environment or near wetlands, lakes, rivers and their margins shall be protected by:
>
> i) avoiding subdivision and the introduction of built structures in these areas, particularly where little or no subdivision or built structures presently exist;
>
> ii) protecting the components of natural character consistent with Policy 7.4.4

It will be seen that the wording of section 6(a) has been tightened up. Subdivision in ONLs in the coastal environment or near wetlands is to be avoided. The ARC has made (subject to policy 6.4.22(4)) a policy decision that almost any further subdivision and built structures are inappropriate. It is also worth noting that this policy applies to any ONLs in the region, not just to ONLs referred to in the ARC's map series 3A.

[239] Then follow a string of machinery policies[362] which contain three important themes: how to deal with the edges of ONLs, the cumulative effects of development in or adjacent to ONLs, and the question of environmental compensation for such development.

> Policy 6.4.22(4)
>
> The naturalness of Outstanding Natural Landscapes and the landscape qualities of Highly Valued Landscape shall be protected by:
>
> i) maintaining the visual coherence and integrity of the landscape;
>
> ii) maintaining significant natural landforms, natural processes and significant vegetation patterns;

---

362 Change 8 pp. 6-11 and 6-12.

iii) ensuring that any subdivision, use or development is necessary and of a type, scale, intensity and location that does not adversely affect the naturalness of Outstanding Natural Landscapes or the key elements. features and patterns of Highly Valued Landscapes.

Policy 6.4.22(5)

Areas that have physical or visual connections to Outstandmg Natural Landscapes shall be managed to maintain these connections and to ensure that the qualities of Outstanding Natural Landscapes are not adversely affected by inappropriate subdivision, use or development in adjacent areas.

Policy 6.4.22(6)

In determining whether an area has physical or visual connections to Outstanding Natural Landscapes the presence of any of the following matters are relevant:

i) important public views to an Outstanding Natural Landscape from adjacent areas;
ii) important public access to Outstanding Natural Landscapes from adjacent areas;
iii) significant landforms and/or vegetation that physically connects Outstanding Natural Landscapes with adjacent areas;
iv) existing subdivision densities that are transitional and act as a buffer between Outstanding Natural Landscapes and more intensive development in urban areas.

Almost always - and this case is no exception - the problem with ONLs is not whether they exist - if that is not obvious then the landscape is probably not both outstanding and natural - but where they end. Policies (4) - (6) attempt to guide lower order policies and methods and decision-makers when dealing with the edges of ONLs.

[240] There are then two proposed policies about cumulative effects of development on landscape:

Policy 6.4.22(7)

The cumulative adverse effects of subdivision, use and development shall be avoided in Outstanding Natural Landscapes and shall be avoided, remedied or mitigated in other landscapes.

Policy 6.4.22(8)

In determining whether subdivision, use and development contributes to the cumulative adverse effects on the landscape, regard shall be had to whether it:

i) has adverse visual effects immediately beyond the boundary of the site,
ii) reduces the visual coherence or integrity of the wider landscape unit;

iii) reduces landscape quality and diversity of the local area, or within the district, or across the wider Auckland Region;

iv) reduces the visual or physical qualities which make the landscape iconic, rare or scarce at the national, regional or district level;

v) is contrary to the achievement of long term certainty in the management of Outstanding Natural Landscapes and Highly Valued Landscapes through regional or district plan provisions.

...

[241] Finally there are two policies on the issue of environmental compensation:

Policy 6.4.22(10)

Restoration and enhancement of degraded landscapes and the management of all landscapes shall be encouraged through appropriate land management practices.

Policy 6.4.22(11)

Subdivision associated restoration and enhancement initiatives may be appropriate where:

i) The scale and intensity of any subdivision has been demonstrated to be necessary and commensurate with achieving significant environmental benefits;

ii) built structures associated with such subdivisions are able to be visually accommodated without adversely affecting the naturalness of Outstanding Natural Landscapes or the key elements, features and patterns of HVL.

Policies (10) and (11) promote the concept that restoration and enhancement initiatives associated with subdivision may be appropriate if two tests are met:

(i) the size and density of subdivision is 'necessary' - by which we take it the policy means 'in order to provide the cost of the environmental benefits to be gained'; and

(ii) buildings can be placed without adverse effects in the relevant landscape.

These policies and similar ones in the Regional Coastal Plan are potentially very useful for landowners and developers.

Highly valued landscapes

[242] As for highly valued landscapes, Policy 6.4.22(3) states that:

> Subdivision, use and development in Highly Valued Landscapes shall ensure that key elements, features and patterns in the landscape are identified and protected, so that their contribution to the visual amenity, the sense of place or landscape character of the area is maintained and enhanced.

As we have said, "Highly Valued Landscapes" are not identified in Change 8. However, the term is defined in Appendix D of Proposed Change 8 as including "places or areas that have important amenity values, or that have distinctive cultural or historical qualities and characteristics, or that are important for their sense of place at the regional, district or local level". "The coastal edge of North Shore's east coast beaches" are given as an example of an HVL[363]. Since the communities of North Shore City have not yet considered what their "highly valued landscapes" are we do not have regard any further to the proposed policies in relation to those landscapes.

Change 9 to the ARPS 'Reference to the Hauraki Gulf Marine Park Act'

[243] Change 9 to the RPS acknowledges the purpose of the HGMPA and makes minor amendments to include reference to that statute. Perhaps the amendment of most note is the addition to Chapter 7 (Coastal Environment) of the words "This chapter is not inconsistent with the HGMPA". We trust we can rely on that.

Change 10 to the ARPS (Natural Hazards)

[244] This changes the 'natural hazards' provisions in Chapter 11 as follows:

> *Objective*
>
> To avoid, remedy, or mitigate the adverse effects of natural hazards an human life, property, infrastructure and the environment, while minimising the adverse effects of measures implemented to reduce the risks of natural hazards.

[363] Change 8 Issue 6.2.7.2.

Policies

2.3. Before provision is made enabling significant development or redevelopment of land, including intensification of land use, any natural hazards, particularly flooding, land instability and coastal hazards, and measures to avoid or mitigate their adverse effects shall be identified

[emphases added]

We acknowledge the fundamental importance of these provisions: flooding, coastal hazards and landslips are all potential hazards affecting human wellbeing and lives which we must consider.

2.74 The Operative Auckland Regional Plans

[245] The Long Bay Structure Plan must be 'not inconsistent with' either of the two operative Regional Plans. They are the Regional Plan: Coastal and the Regional Plan: Sediment Control. It would be difficult for a structure plan to be inconsistent with the general objectives and policies of the Regional Plan: Coastal because they are relatively open-ended especially where they include references to inappropriate[364] development without specifying what that might be. The double negative imposed by the statutory test makes it difficult to conceptualise how a reasonable structure plan could be inconsistent with a coastal plan that disallows only inappropriate development.

[246] As for the Regional Plan: Sediment Control it is possible that the two Long Bay structure plans are inconsistent with that plan simply because of the sheer size of the earthworks. However, we consider that is a matter more appropriately considered by the Auckland Regional Council if and when anyone applies for resource consents. We do not consider the Sediment Control Plan further.

2.75 Proposed Auckland Regional Plan: Air, Land and Water

[247] We are to have regard to the proposed Auckland Regional Plan: Air Land, Water ("the PARP:ALW"). Much of the PARP:ALW is concerned with stating the objectives, policies and methods in relation to the matters for which the ARC has

364 e.g. Objective 3.3.2 and Policy 3.4.1; Objective 5.3.3.

primary responsibility[365]. However, it also contains high level objectives, policies and methods to which we must have regard[366] if they relate to:

- any matter of regional significance[367]; or
- any matter for which the regional council has primary responsibility under Part 4 of the RMA.

All the relevant considerations appear to be in Chapter 2 (Values) of the PARP:ALW. The relevant objectives and policies are grouped under three relevant headings[368]:

- Natural values
- Use and development
- Tangata whenua

Natural values

[248] Relevant high level PARP:ALW provisions on 'Natural Values' include[369]:

> 2.1.3.1 To sustainably manage the quality and diversity of Auckland's mural values by:
>
> a) Maintaining areas of high environmental quality;
>
> b) Remedying or mitigating adverse effects on degraded natural and physical resource where these cannot be avoided;
>
> c) Enhancing degraded areas where practicable.

There are also two other objectives[370] which in effect merely restate section 6(a) and 6(c) of the Act.

[249] The most relevant of the eleven policies is:

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365 Under section 30 of the RMA.
366 Section 74(2) of the RMA.
367 Section 74(2)(a)(ii) of the RMA.
368 PARP:ALW p. (i) (Table of Contents).
369 PARP:ALW p. 2.1-3.
370 Objectives 2.1.3.2 and 2.1.3.3.

2.1.4 Policies

2.1.4.1 The natural character of wetlands, ..., and rivers and their margins shall be preserved and protected from inappropriate use and development by avoiding where practicable, or remedying or mitigating, adverse effects on the qualities, elements and features that contribute to the natural character of these areas. When determining the qualities, elements and features that contribute to natural character for the purposes of Policy 2.1.4.1 regard should be had to the matters listed in Policy 2.1.4.8

...

With respect this policy is not of much assistance because it gives no guidance as to what is inappropriate. The most it can do is give some assistance in ascertaining the value of the wetland or stream which should be protected from inappropriate use.

[250] An environmental compensation theme is raised in the next policy. This provides a partial answer to the problem of reconciling development with preservation and enhancement of ecosystems:

2.1.4.9 The adverse effects of use and development in one area or on one type of resource may be offset by mitigation measures elsewhere within the Region, provided that there is an overall maintenance of environmental quality. However, any adverse effects on areas of high natural character or significant ecosystems identified in Policy 2.1.4.8(n) should be avoided to the fullest extent practicable in the first instance, with offset mitigation being implemented where adverse effects on those resources are unavoidable.

However, no person relied on this policy in these proceedings.

Use and development

[251] Objective 2.2.3.1 reads:

To enable appropriate use and development of air, land and freshwater resources, while recognising the characteristics, constraints and availability of those resources.

We would not normally have quoted such a general objective, but we have done so here because it confirms that at least in the Auckland Region some natural resources are recognised as imposing ‘constraints’ on their ‘availability’ for other uses.

[252] The following policies are relevant because they give more direction:

> 2.2.4.1
>
> Use and development of air, land and water within Urban Areas (the MUL and rural and coastal settlements) is appropriate where:
>
> a. it is consistent with the strategic directions of the ARPS and the Auckland RGS; and
>
> b. adverse effects are avoided, remedied or mitigated.
>
> 2.2.4.6
>
> The positive social, economic and cultural effects and benefits arising from any proposal for use and development shall be considered when assessing the overall effects of a proposal on air, land or water resources.

This is an important policy from Landco's perspective, although we consider it must be read in context with the other relevant policies, above and below.

[253] The next policy is:

> 2.2.4.8
>
> A precautionary approach shall be taken to proposals for use and development where there are potentially significant adverse effects, that cannot be fully assessed due to a lack of scientific or technical knowledge and where there is a threat of serious or irreversible harm to the environment.

Tangata whenua values

[254] The most relevant objective is[371]:

> To afford appropriate priority to the relationship of Tangata Whenua and their culture and traditions with their ancestral taonga when this conflicts with other values.

[371] Objective 2.3.3.2 [PARP:ALW p. 2.3-7].

Other Objectives

[255] Mr Jarvis[372] also drew our attention to Policies[373] 5.3.1, 5.3.3 and 5.3.4 which he opined placed an emphasis on protecting, maintaining and enhancing the quality of land and water resources. Section 5.1.3.4 Land Management of the proposed plan explains that "Discharges of sediment from earthworks, vegetation removal and other land disturbing activities are addressed in the Regional Plan: Sediment Control (2001)".

[256] Finally we should mention that the PARP:ALW categorises all the streams in the region in an all or nothing way as Category 1 or Category 2 and then provides different objectives, policies and rules for each category. The parties lodged memoranda in May 2008 advising that the definitions of Category 1 (Permanent River or Stream) and Category 2 (Intermittent Stream) had now been fixed by consent order[374] of the Environment Court dated 17 April 2008. In her memorandum[375] for Landco Ms Somerville submits that the new definitions confirm Dr Keesing's conclusion in his evidence-in-chief[376] that the disputed streams (e.g. 1A-1D, 9A-9C) are intermittent or Category 2 under the PARP: ALW because they do not have continued flow or stable pools.

[257] In their response counsel for the NSCC[377] and the ARC[378] reminded us *(inter alia)* that the agreed statement by the freshwater ecologists states:

> Some Category 1 streams may have low ecological values and some Category 2 streams may have high ecological values.

- and that Dr Parkyn wrote in her evidence[379]:

---

372 Mr H D Jarvis, evidence-in-chief para 4.55 [Environment Court document 81].
373 We assume he meant the Objectives with corresponding numbers.
374 In *WFH Properties Limited and others v Auckland Regional Council* (ENV-2006-AKL-000061).
375 Dated 16 May 2008.
376 Dr V F Keesing, evidence-in-chief paras 2.4 to 2.5 [Environment Court document 37].
377 Dated 23 May 2008.
378 Dated 23 May 2008.
379 Dr S M Parkyn, evidence-in-chief para 3.1 [Environment Court document 49].

> For the purposes of my evidence [the] distinction [between Category 1 and 2 streams] is not so important and I will refer to small headwater streams as a general group that encompasses all of the potential states of these small streams.

[258] In the circumstances of this case to categorise the streams under the PARP:ALW would not be particularly helpful. There are higher level objectives and policies which we have identified and will have regard to in Part 4.0, but the categorisation of the streams is not referred to in the objectives we have quoted. The categorisation arises for the purpose of stating rules in the Regional Plan (which are not relevant in these proceedings). We consider we should simply assess all streams on their merits on the evidence.

2.8 The New Zealand Coastal Policy Statement

[259] It was common ground[380] that any Long Bay Structure Plan must give effect to the New Zealand Coastal Policy Statement. Despite that there is no reference to the NZCPS in the evidence-m-chief of the planners for Landco. Nor is it included in Ms Skidmore's list of 'Documents Reviewed'[381]. Of North Shore City's witnesses neither Mr Mackie nor Mr Brown (wearing his 'planning hat') mentions it in their evidence, and Mr Mead only briefly[382].

[260] Because of the direct and undisputed importance of the NZCPS we leave our discussion of it to Part 4 of this decision. At this stage we simply identify the most important relevant provisions - particularly those which identify national priorities for the natural character of the coastal environment[383] in Chapter 1 of the NZCPS.

Location/cumulative effects policy

[261] This states:

> **Policy 1.1.1**
>
> It is a national priority to preserve the natural character of the coastal environment by:

---

380 Dr Somerville's submissions (NSCC) para 5.13 (P. 20) [Environment Court document 1]; Mr Galbraith's submissions (Landco) para 5.4 [Environment Court document 21].

381 Ms R Skidmore, evidence-in-chief App 2 [Environment Court document 23].

382 Mr D Mead, evidence-in-chief p. 45 [Environment Court document 3].

383 New Zealand Coastal Policy Statement Chapter 1 Policies 1.1.1 to 1.1.5.

(a) encouraging appropriate subdivision, use or development in areas where the natural character has already been compromised and avoiding sprawling or sporadic subdivision, use or development in the coastal environment;

(b) taking into account the potential effects of subdivision, use and development on the values relating to the natural character of the coastal environment, both within and outside the immediate location; and

(c) avoiding cumulative adverse effects of subdivision, use and development in the coastal environment.

Mr Mead stated[384] that:

> **This is essentially the trade-off that has already been made in the 1996 Environment Court** decision where urban development was prevented from occurring in the more significant Okura estuary in accordance with Policy 1.1.1(b) and (c) of the NZCPS, but allowed in Long Bay.

We doubt that. The effect of the *North Shore City Council v the Auckland Regional Council*[385] is that the Court thought that consideration of whether or not the LBSPA should be urbanised should not necessarily be precluded by categorising it on the rural side of the MUL. The policy still requires any subdivision, development and use to be appropriate and all the other NZCPS policies need to be given effect when establishing appropriate developments.

[262] The policy focussed on cumulative adverse effects[386] is important because Long Bay and the smaller bays to the north of it up to Piripiri Point are the last relatively natural bays on the North Shore City's eastern coast. That fact does not preclude development behind Long Bay but the policy suggests it is a national priority to avoid adverse effects.

Indigenous biota policy

[263] This states:

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384 Mr D W A Mead, evidence-in-chief para 5.104 [Environment Court document 3].
385 [1997] NZRMA 59.
386 NZCPS 1.1.1(c).

Policy 1.1.2

It is a national priority for the preservation of the natural character of the coastal environment to protect areas of significant indigenous vegetation and significant habitats of indigenous fauna in that environment by:

(a) avoiding any actual or potential adverse effects of activities on the following areas or habitats:
  (i) areas and habitats important to the continued survival of any indigenous species; and
  (ii) areas containing nationally vulnerable species or nationally outstanding examples of indigenous community types;

(b) avoiding or remedying any actual or potential adverse effects of activities on the following areas:
  (i) outstanding or rare indigenous community types within an ecological region or ecological district;
  (ii) habitat important to regionally endangered or nationally rare species and ecological corridors connecting such areas; and
  (iii) areas important to migratory species, and to vulnerable stages of common indigenous species, in particular wetlands and estuaries;

(c) protecting ecosystems which are unique to the coastal environment and vulnerable to modification including estuaries, coastal wetlands, mangroves and dunes and their margins; and

(d) recognising that any other areas of predominantly indigenous vegetation or habitats of significant indigenous fauna should be disturbed only to the extent reasonably necessary to carry out approved activities.

[264] In relation to policy (a), no witness claimed that any part of the LBSPA was important to the continued survival of any indigenous freshwater or marine species. Mr Corbett confirmed that some parts of the Awaruku headland in particular are known habitats for skinks. We consider the implications of that further in Part 3.0 of this decision.

[265] The indigenous biota policy also requires us - policy (b) - to avoid adverse effects on areas containing nationally vulnerable species. That last term is not defined in the NZCPS, but the freshwater experts described long-finned eel *(Anguilla dieffenbachii)* and the mayfly *(Tepakia caligata)* as nationally threatened, and 'vulnerable' is usually regarded as the lowest of three categories of threatened species

(i.e. vulnerable, endangered, extinct). Another subpolicy in the NZCPS makes it a national priority to avoid or remedy adverse effects on areas important to vulnerable stages of common indigenous species 'in particular wetlands and estuaries'. That is particularly important for stream 2 which we have found is important for breeding of inanga *(Galaxias maculatus).*

[266] Similarly the forest remnants contain nationally vulnerable kereru and kaka so potential adverse effects on them should be avoided.

Landscapes, seascapes and landforms

[267] This policy states:

> **Policy 1.1.3**
>
> It is a national priority to protect the following features, which in themselves or in combination, are essential or important elements of the natural character of the coastal environment:
>
> (a) landscapes, seascapes and landforms, including:
>
> a. significant representative examples of each landform which provide the variety in each region;
>
> (ii) visually or scientifically significant geological features; and
>
> (iii) the collective characteristics which give the coastal environment its natural character including wild and scenic areas;
>
> (b) characteristics of special spiritual, historical or cultural significance to Maori identified in accordance with tikanga Maori; and
>
> (c) significant places or areas of historic or cultural significance.

[268] This policy makes it a national priority to protect the Homestead Spur, Grannie's Ridge and the Piripiri Point ridge because they are the landscape components which give the coastal environment in this area its natural character. Further, on the Awaruku headland protection of all the cultural heritage dimensions (tangata whenua values, historical heritage values, and landscape values) is a national priority.

Protection of natural processes, biodiversity and ecosystems

[269] This policy states:.

> **Policy 1.1.4**
>
> It is a national priority for the preservation of natural character of the coastal environment to protect the integrity, functioning, and resilience of the coastal environment in terms of:
>
> (a) the dynamic processes and features arising from the natural movement of sediments, water and air,
> (b) natural movement of biota;
> (c) natural substrate composition;
> (d) natural water and air quality;
> (e) natural bio diversity, productivity and biotic patterns; and
> (f) intrinsic values of ecosystems.
> ...

This policy is important when considering the potential effects of sediment deposition into the estuaries of Vaughans and Awaruku Streams and transport and deposition into the Marine Reserve.

Rehabilitation

[270] This policy is:

> **Policy 1.1.5**
>
> It is a national priority to restore and rehabilitate the natural character of the coastal environment where appropriate.

One way of implementing this policy is to ensure that environmental compensation is obtained in the form of rehabilitation of habitats and landscapes where reasonably possible in return for development rights.

[271] Chapter 3 of the NZCPS (Activities involving the subdivision, use or development of areas of the coastal environment) is also relevant. This chapter identifies several matters which should be recognised in policy statements and plans including:

maintenance and enhancement of amenity values; providing for appropriate subdivision, use and development and managing any adverse effects of the same; the adoption of a precautionary approach; and recognition of natural hazards.

2.9 Part 2 of the RMA

2.91 Introduction

[272] Part 2 of the RMA is headed **'Purpose and principles'.** It states[387]:

> **5 Purpose**
>
> (1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
>
> (2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while -
>
> (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
>
> (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
>
> (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.
>
> **6 Matters of national importance**
>
> In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:
>
> (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
>
> (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
>
> (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
>
> (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
>
> (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

387 This is the relevant form so does not contain amendments to sections 6 and 7 added from 2004 on. They are irrelevant to these proceedings anyway.

(f) the protection of historic heritage from inappropriate subdivision, use, and development

7 Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to -

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(e) Repealed

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources:

(h) the protection of the habitat of trout and salmon:

...

8 Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

[273] All parties agree that the ultimate decision for the Court is to achieve the 'single broad purpose' - *McGuire v Hastings 'District Council*[388] - of the RMA which is the sustainable management of the relevant resources under section 5(1) of the RMA. Section 5(2) then defines 'sustainable management' in two parts: first the enabling of people and communities to provide for their wellbeing, health and safety; and secondly the sustaining and safeguarding of certain resources, and the avoiding remedying and mitigating of adverse effects on the environment[389]. We accept that section 5(2) is written so that the two components are to be achieved at the same time: the word

388 [2001] NZRMA 557 at [21] (PC).

389 Section 5(2)(a) to (c) of the RMA.

'while' is to be treated as a 'co-ordinating conjunction' as explained in *Winstone Aggregates Limited v Papakura District Council*[390].

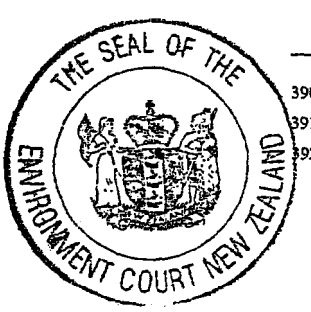
[274] An important issue is what precisely 'social, economic, and cultural wellbeing' is, and what contributes to it. Indeed the apophthegm that all philosophy is a series of 'footnotes to Plato' has some truth in it for section 5 of the RMA when it is recalled that much of The Republic is about the purpose of government (the guardians) being to achieve *eudaimonia* or wellbeing of its citizens. Fortunately the RMA does not require local authorities or the Environment Court to become philosophers, because Parliament has given the directions in section 5(2)(a), (b) and (c) and in the principles in sections 6 to 8 as to various factors that it says contribute to wellbeing and as to their relative importance.

[275] It is well settled that a section 6-8 matter neither automatically nor necessarily 'vetoes' all other considerations *(Minhinnick v Watercare Services Limited*[391]*)* nor should it be achieved 'at all costs' *(NZ Rail Limited v Marlborough District Council*[392]*).*

[276] The scheme of Part 2 of the RMA includes various feedback or reiteration loops. They derive from the fact that section 5(2)(c) refers to 'avoiding, remedying or mitigating adverse effects of activities on the environment...'; and section 7(b) requires 'efficient use of ... resources'. We infer that in coming to a decision under the Act local authorities must identify all the relevant facts and factors, give weight to them under Part 2 (and any other relevant instruments) and come to a provisional view as to the outcome; then look at whether each of the predicted adverse effects are sufficiently avoided, remedied or mitigated, or over-zealously so and finally reweigh the factors and re-assess the overall outcome.

2.92 Submissions on Part 2

[277] Landco had, if we understood counsels' submissions correctly, five basic arguments about the application of Part 2 of the Act:



390 A49/2002 at para [18].
391 [1998] NZRMA 113 at 127 (CA).
392 [1993] 2 NZLR 641; [1994] NZRMA 70 at 86 (HC).

(1) that 'people' and the 'natural environment' should be treated equally; and

(2) that social values should be actively promoted by the North Shore City under the RMA,

(3) that sections 6 to 8 inform sustainable management;

(4) that sections 6 to 8 do not contain any ranking;

(5) that 'land use efficiency' is very important in the scale of things.

'People' versus 'the natural environment'

[278] Landco's counsel appeared to regard Part 2 of the RMA as a conflict between human aspirations and protection of natural characteristics. Counsel wrote[393] that "Landco rejects outright the argument that because there are fewer references to 'people' in sections 6 and 7 this necessarily elevates the natural environment". Counsel referred to a passage in *Winstone Aggregates Limited v Papakura District Council*[394] where the Environment Court wrote:

> The application of section 5(2)(c) cannot fulfil the overall purpose of sustainable management, if the section is interpreted in such a way as to give primacy to the ecological values over the management function. To do that would not always fulfil the purpose of sustainable management, but may in some cases. What is required is a consideration of all aspects of the case, and then a weighing of factors in order to evaluate which will best achieve the purpose and principles of the Act.

Counsel then submitted that case law supports neutrality between the "natural environment" and "people" imperatives of Part 2. Counsel referred to the statement in *Kiwi Property Management Limited and Others v Hamilton City Council*[395] that:

> In our view, the enabling and management functions of sections 5(2) are of equal importance.

We observe that there is some confusion in the labels being attached to different provisions in Part 2. In *Kiwi Property Management* the first part of section 5(2) appears to be an 'enabling' function, and the second part of section 5(2) - section 5(2)(a) to (c) - is the 'management' function. That contrasts with the *Winstone Aggregates* decision

393 Landco's closing submissions para 2.4.
394 Decision A49/2002 at para [22].
395 (2003) 9 ELRNZ 249 at paragraph 43.

where 'the management function' appears to be the name for the first part of section 5(2). We consider it is more consistent if the first component of section 5(2) is called 'the enabling obligation' and the second is simply called 'section 5(2)(a) to (c)'. But if the point of *Kiwi Property Management* is that the 'enabling' obligation and the section 5(2)(a) to (c) functions are of equal importance, then we respectfully agree. That is not the same as setting up a dichotomy between the 'natural environment' - which is not a phrase used in the RMA - and 'people'.

[279] Counsel for Landco referred to *Judges Bay Residents Association v Auckland Regional Council*[396] where the Environment Court held:

> In general the Act contains no preference for managing use and development of resources for enabling communities to provide for their **economic** wellbeing over protection of resources for enabling communities to provide for their **social and cultural** wellbeing, sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations, and avoiding, remedying adverse effects on the environment.
> [Our emphases]

This decision makes another point completely - and one we respectfully agree with - where the Environment Court stated that the RMA contained no general preference for economic wellbeing over social and cultural wellbeing and the section 5(2)(a) and (b) matters.

The role of sections 6 to 8

[280] We have already recorded that a section 6 to 8 matter does not veto or trump other considerations. As to their true legal effect: counsel for Landco submitted that sections 6 to 8 'inform (not dictate)' the decision under section 5. While we accept completely that there are no absolutes under the RMA, the Landco proposition goes too far the other way. In *McGuire v Hastings District Council*[397] Lord Cooke, giving the advice of the Privy Council, stated that sections 6 to 8 contain '... strong directions, to be borne in mind at every stage of the planning process' - as to what is sustainable management. A direction is more than information.

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396 A72/1998.
397 [2001] NZRMA 557 at para [21] (PC).

[281] It is also important to recognise that most of the matters in section 5(2)(a)-(c), and sections 6 to 8 are fully or principally anthropocentric: they are matters which relate to the social, economic and cultural wellbeing of people and communities. The only matters which are not human-centred are section 7(d) and (possibly) section 6(c). As for section 6(c) - protection of areas of significant indigenous vegetation - on a shallow ecological view of the value of biodiversity that is valuable to humans too. It seems to us that the only provision not focussed on humans at all is section 7(d) which refers to 'the intrinsic values of ecosystems'.

Is there a ranking in sections 6 to 8?

[282] *McGuire* was concerned with sections 6 to 8 as a whole. However, when sections 6 to 8 are examined separately there is some differentiation between the strength of the directions given in each of them. In decreasing order of strength of direction they are:

- section 6 matters are to be recognised and provided for;
- the section 8 obligation to 'take account of' the Treaty of Waitangi;
- section 7's reference to "... hav[ing] particular regard to" imposes a duty to be "on enquiry" - *Gill v Rotorua District Council*[398]*; Quarantine Waste (NZ) v Waste Resources Limited*[399]. The duty to have particular regard to a matter means the local authority (or this Court) must look into the matter raised, but may in its discretion reject it as insufficiently relevant or worthy of weight.

[283] Landco's counsel also referred to *Fish and Game New Zealand v Otago Regional Council*[400] where the Environment Court held:

> The Act itself does not identify a preference for natural resources over physical resources.

398 [1993] 2 NZRMA 604.
399 [1994] NZRMA 529.
400 C79/2002 at paragraph 146.

With respect, we find it difficult to agree with that unqualified remark. First, section 5(2)(b) requires certain natural resources to be safeguarded, and if that occurs then section 5(2)(a) puts their sustaining on an equal footing with physical resources. But section 5(2)(b) suggests a general primary concern for those natural resources which support human and other life. Secondly, and more practically, in reliance on *McGuire* we consider that the RMA gives strong directions that the relationship between humans and certain 'natural resources' as identified in section 6(a), (b), (c) and (d) are to be recognised and provided for as a matter of national importance. We conclude that there is an initial preference for specified natural resources over general physical resources (although of course any one or more such matters may in the end be outweighed by an accumulation of other factors) - other than physical resources which may be of national importance under section 6(e) and (f).

[284] The important point is that section 6, 7 and 8 matters are not - except for the non-anthropocentric applications of section 5(2)(a) and (b) and possibly for section 7(d) - separate from the wellbeing of people and communities but elements of that wellbeing. In this case we read evidence from people who live around the LBSPA area as to the importance to their wellbeing of the existing characteristics of the area. We also read evidence from the Reverend Faleatua Faleatua who is a pastor from South Auckland. He described[401] how at least twice a year his congregation and many other church groups come to the Long Bay Regional Park. The figures for usage of the Regional Park show that many other people from greater Auckland also visit the park.

2.93 Efficiency in the RMA

[285] Section 7 of the RMA obliges a local authority to have particular regard to 'the efficient use and development of natural and physical resources'. Despite the fact the Act has been in force for over 16 years there is still doubt over what 'efficiency' means in the RMA. As far as we know there is no higher authority on the issue, so what follows is rather tentative.

401 Rev F T Faleatua, evidence-in-chief para 3.1 [Environment Court document 61].

[286] The issue of efficiency arises because counsel for Landco submitted that there is both statutory and regulatory support for the notion of efficiently using natural and physical resources (including land). As to the statutory support, they wrote[402]:

> (a) The need for efficient use of natural and physical resources is implicit in the concept of sustainability, and is therefore central to the operation of section 5 of the RMA,
>
> (b) Section 7(b) specifically requires that particular regard shall be had to the efficient use and development of natural and physical resources.

Nowhere, so far as we can see, do Landco's counsel or their witnesses attempt to define 'efficiency', but their witnesses, especially Mr Bradbourne, were sure that the Landco structure plan was more efficient.

[287] Mr Bradboume, the strategic planner called for Landco, admitted[403] directly to the Court that efficiency is a value-laden concept. We agree that values are at the heart of the concept of efficiency. Our understanding is that generally efficiency is the allocation of (limited) resources to the uses for which society values them most. An internationally used economics primer - Microeconomics by Samuelson and Nordhaus[404] - states that:

> Allocative efficiency ... occurs when no possible reorganization of production can make anyone better off without making someone else worse off.

[288] It may look inefficient for all those vehicles with single occupants to be driving across the Auckland Harbour Bridge in the mornings and evenings, but the drivers themselves obviously do not think so. Indeed while they do not pay for the price of the marginal increase in congestion they are causing they are almost certainly correct because the outputs they get (convenience and comfort, flexibility, privacy) still exceed the considerable, irritating costs of delay when compared with the alternatives. Efficiency is a relative concept.

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402 Landco closing submissions para 4.6(a) and (b) [Environment Court document 87].
403 Transcript p. 1984, line 29.
404 P A Samuelson, W D Nordhaus (McGraw-Hill, 1998) 16th edition, p. 148.

[289] Since section 5(2) is about enabling people and communities to provide for their wellbeing, then on the broad definition above section 5 - expanded on by section 7(d) - is all about efficiency - what we might call 'environmental efficiency': *Marlborough Ridge Limited v Marlborough District Council*[405]. Mr Jarvis, a planner called by the ARC, observed[406] of the regional framework:

> ... any assessment concluding that "efficient use" of land is the over-riding policy imperative within the MUL needs to make it clear that efficiency in this context implies a balancing [we prefer 'weighing'] of all the various objectives and policies; "efficient use" does not imply an emphasis on residential yield, this is but one of the factors to be considered..

Directions as to the most relevant (but not the only) values to be considered is ascribed by Parliament in section 5(2)(a) and (b), and sections 6 to 8 of the Act.

[290] As this case shows in a limited way an economist can also make valuable contributions to RMA debates in general and about section 7(b) in particular in real world circumstances. As long as economists identify the ways in which any necessary preconditions for theoretical market efficiency do not exist, and how they allow for that, their evidence can be very useful in checking that a local authority's (or the Environment Court's) decision does not lead to absurd consequences. Dr T Hazeldine, the economist called by NSCC (and the only one to give evidence in these proceedings) observed[407]:

> The concept of efficiency is at the core of economic analysis, and its elaboration in a real-world setting is the major means by which economists can be of use in public policy matters. Efficiency is concerned with the generation of benefits and the avoidance of costs. When, as in the present case, the policy context involves comparing two options (the two structure plan proposals), the more efficient, and thus to be preferred option is the one which is assessed to be likely to yield the highest net benefits (total benefits minus total costs), all relevant factors considered.

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405 (1997) 3 ELRNZ 483; [1998] NZRMA 73.
406 Mr H D Jarvis, evidence-in-chief para 4.64 [Environment Court document 81].
407 Dr T Hazeldine, rebuttal evidence para 4.1 *et ff* [Environment Court document 20].

2.94 The enabling component in section 5(2)

[291] The first component of the purpose of the Act is to enable people and communities to provide for their wellbeing, health and safety. There seems to be a dearth of higher authority on the meaning of 'enabling people and communities to provide for wellbeing'. Many of the cases - and, with respect, most notably the judgments of the Supreme Court in *Westfield (New Zealand) Limited v North Shore City Council*[408] could be taken, at least when read superficially and without recognising its special circumstances as a 'notification' case, as if 'managing wellbeing' is the wording in the RMA. That is, the two steps in section 5(2) of:

- enabling people and communities
- to provide for their wellbeing, health and safety

- are substituted by one:

- managing the wellbeing of people and communities.

The issue was not raised here so we will express no view on it, except to say guidance from the High Court on the meaning of 'enabling' would be very welcome.

Social wellbeing, health and safety

[292] If there was an intention by Parliament to avoid local authorities having to inquire into how wellbeing is to be achieved, rather than enabled, then that has been negated by at least three problems. The first is the line of difficult cases where a party puts forward a proposal of such perceived public benefit, that the local authority considers enabling the activity is appropriate. The classic cases are *New Zealand Rail Limited v Marlborough District Council*[409] (port facility in the coastal environment); *Trio Holdings Limited v Marlborough District Council*[410] (sponge farm to assist medical research in the coastal environment); *Auckland Volcanic Cones Society Incorporated v Transit New Zealand*[411] (motorway requiring excavation of an outstanding natural

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408 [2005] NZRMA 337.
409 (1993) 2 NZRMA 449 confirmed by the High Court on appeal, [1994] NZRMA 70.
410 [1997] NZRMA 97.
411 [2003] NZRMA 54 (Environment Court confirmed on appeal), [2003] NZRMA 316.

feature); and *Genesis Power Limited v Franklin District Council*[412] (wind farm in the coastal environment). In our opinion the important message from those cases is that it takes powerful countervailing considerations to make development 'appropriate'.

[293] The second reason that the search for social wellbeing has widened is due to the economic thread of the RMA as exemplified in section 7(b) and section 32 - although it then needs to be recognised that sections 6 to 8 of the RMA obscure the calculation of costs and benefits when they require extra attention (to use a neutral phrase) to be paid to certain matters. Trying to reconcile those matters the Environment Court in *Ngati Hokopu Ki Hokowhitu v Whakatane District Council*[413] wrote that sections 6 to 8 of the Act provide "... diminishing notional multipliers (of costs and benefits, or of weights depending on the evaluative metaphor the Court is using)".

[294] The third and most commonly given reason for looking at all the benefits and costs of possible activities - including those on social wellbeing (usually unquantified) - has been because of the feedback loop in the second part of section 5(2). Section 5(2) requires the:

> ... avoiding, remedying, or mitigating [of] any adverse effects of activities on the environment.

'Environment' is defined very widely in section 2 of the RMA to include:

> (a) ecosystems and their constituent parts, including people and communities; and
> (b) all natural and physical resources; and
> (c) amenity values;
> (d) the social, economic, aesthetic, and cultural conditions which affect the matters in paragraphs (a) to (c) of this definition or which are affected by those matters.

The difficulty is that paragraph (d) of the definition is so broad that it looks as if the local authority must consider anything anybody wishes to raise. That may be so, but it is often overlooked that the evaluation of 'social, economic, aesthetic, and cultural conditions' also needs to be made in the light of the directions in section 5(2)(a) and (b)

412 [2005] NZRMA 541.
413 [2003] 9 ELRNZ 111 at [36].

and sections 6 to 8. With that important qualification it is now generally accepted that local authorities do usually need to inquire into enabling social, economic and cultural wellbeing if that is raised by any party.

The contribution of sections 6 to 8 to evaluating wellbeing

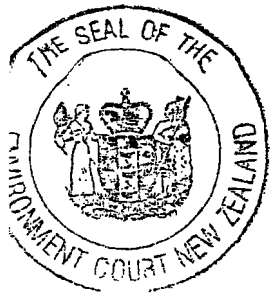
[295] The cases confirm that many of the section 6 to 8 matters are not merely about the 'natural environment' but are about the relationship between the wider environment and human wellbeing. As the (then) Planning Tribunal stated in the Long Bay - Okura metropolitan urban limits case - *North Shore City Council v Auckland Regional Council*[414] - which was partly about the very land which is now the LBSP area:

> A way of managing natural and physical resources which fails to sustain to safeguard, and to avoid ... the matters stated in paragraph (a), (b) and (c) [of section 5(2)] thereby also restricts the extent to which that way of managing the resources enables a community to provide for its wellbeing.

There is a very important principle in that statement, although we respectfully consider the Tribunal could have put the matter more widely because it is not only section 5(2)(a) and (b) but also the principles in sections 6 to 8 of the Act which give directions about matters contributing to the wellbeing of people and communities. The latter point was recognised by the Court of Appeal in *Minhinnick v Watercare Services Limited*[415] when it wrote:

> Those [s. 6] issues will usually, as here, intersect with other issues such as health and safety. ... Cultural wellbeing, while one of the aspects of section 5, is accompanied by social and economic wellbeing. While ... section 6(e) ... calls for close and careful consideration, other matters may in the end be more cogent ...

[296] So when Landco's counsel stated that Landco rejected the proposition that 'natural environment' is elevated over 'people', they were missing the point. Certain characteristics of the way people relate to the environment including:



414 [1997] NZRMA 59 at 93.
415 [1998] NZRMA 113 at 124 (CA).

- enjoyment of the coastal environment;
- appreciation of an outstanding natural landscape and its features;
- confidence in the protection of significant habitats from cumulative. degradation;
- ability to access the coast and streams;
- relationship with their ancestral lands;
- enjoyment of and education by cultural heritage

- are integral to social and cultural wellbeing, just as making a profit from the sale of subdivided land (possibly - there may be no public benefit from this) and the benefit for purchasers of sections (the consumer surplus) are contributions to economic wellbeing.

[297] We hold that Parliament's directions that certain aspects of people's wellbeing, relating to ways and rates of managing the use, development and protection of natural and physical resources, are matters of national importance[416], or must be taken account of[417] or are to be had particular regard to[418], if complied with (to the extent appropriate in the factual circumstances) are matters directly relating to social, economic and cultural wellbeing. In legal terms there is in each situation a presumption (of varying strength depending on which of sections 6, 8 and 7 are applicable) that providing for the relevant matter, or taking it into account, or having particular regard to it, is to enable communal or individual wellbeing, health or safety.

2.95 The Constraints on resource use and development in section 5(2)(a) to (c)

[298] Sections 5(2)(a) and (b) are not often referred to, probably because of the generality of their language.

Section 5(2)(a): sustaining potential

[299] The idea behind section 5(2)(a) was stated by the then Planning Tribunal in *Canterbury Regional Council v Selwyn District Council*[419] to be:

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416 Under section 6 of the RMA.
417 Under section 8 of the RMA.
418 Under section 7 of the RMA.
419 (1996) 2 ELRNZ 395; [1997] NZRMA 25.

> ... to ensure present people and communities do not, in pursuit of their own well-being, consume or destroy the existing stock of ... resources, so as improperly to deprive future generations of the ability to meet their needs.

Section 5(2)(a) needs to be read in the light of *inter alia:*

- section 5(2)(c) as to avoiding, remedying or mitigating adverse effects;
- section 3 which defines 'effect' very widely to include:

  ...

  (c) any past, present, or future effect,

  (d) any cumulative effect which arises over time or in combination with other effects;

  and
- section 7(f) with its reference to enhancement of the quality of the environment.

[300] Read with section 5(2)(c)'s reference to avoiding or mitigating (and if necessary remedying) the adverse cumulative and/or past effects[420], section 5(2)(a) suggests that ecosystems (including the contributions of air, water and soil) should generally be sustained and (with section 7(f)) perhaps even enhanced. If there is not a net conservation benefit - as it was described in *Baker Boys Limited v Christchurch City Council*[421] - for the relevant ecosystem then the ecosystem may not be sustained because of the cumulative effects of multiple minor degradations. Always of course that is not an absolute value.

[301] The idea that section 5(2)(a) invites seeking a net conservation benefit leads to the principle of environmental compensation as developed in such cases as *Arrigato Investments Limited v Auckland Regional Council*[422] and *J F Investments Limited v Queenstown Lakes District Council*[423]. That is, if part of a (significant ? or any ?) native ecosystem is to be adversely affected then at least an equal quantity (preferably on site and at least in the same ecosystem) should be rehabilitated to at least an equal

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420 Section 3 defines 'effects' to include 'cumulative effects' and 'past effects'.
421 [1998] NZRMA 433.
422 [2001] NZRMA 481.
423 C48/2006 at para [42].

quality. Change 8 to the Auckland RPS contemplates environmental compensation as being appropriate in the region, as we have already discussed.

[302] One issue that is raised by the ecological evidence in these proceedings relates to whether, and if so, how much the Court should consider the potential to restore ecosystems within the LBSPA. In fact, it was common ground that the main stem of Vaughans Stream should be revegetated extensively. The dispute was over how far tributaries and headwaters should be restored by fencing stock out and replanting riparian strips. Dr V F Keesing, an aquatic ecologist called for Landco stated[424]:

> Where the ecological values of streams are low and the effects of their loss not significant then there should be no issues relating to their removal.

We consider that is not correct as a matter of law: it all depends on the ecological context. The purpose of the RMA requires remedying of adverse effects, which includes present and past effects[425] of activities; and section 7(f) requires us to have particular regard to maintaining and enhancing the quality of the environment. So in appropriate cases enhancement of the current state of a part of the environment by remedying present adverse effects must be relevant. Indeed the ARC in particular urged that in this case it was appropriate to look at that issue.

Section 5(2)(b): safeguarding life-supporting capacity of water and ecosystems

[303] The RMA does not define what is meant by an ecosystem, but the New Zealand Biodiversity Strategy[426] usefully defines the word as meaning:

> An interacting system of living and non-living parts such as sunlight, air, water, minerals, and nutrients. Ecosystems can be small and short-lived, for example, water-filled tree holes or rotting logs on a forest floor, or large and long-lived such as forests or lakes.

We adopt that definition which usefully draws attention to the heterogeneity of ecosystems and their dynamic components.

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424 Dr V F Keesing, evidence-in-chief para 6.7 [Environment Court document 37].
425 See definition of effect in section 3 of the RMA.
426 MFE, February 2000.

[304] Section 5(2)(b) is of particular relevance in this case in terms of three ecosystems: the terrestrial ecosystem represented by the patches of native forest and the endemic birds they assist to support; the freshwater ecosystem supporting eels and inanga amongst other species; and the coastal marine ecosystem.

2.96 Conclusions

[305] Perhaps because of Greig J's injunction in *NZ Rail*[427] that Part 2 of the Act "... should [not] be subjected to strict rules and principles of statutory construction which aim to extract a precise and unique meaning from the words used", the Environment Court has been reluctant (especially latterly) to go far into the relationship between the first part of section 5(2) and sections 6 to 8. We consider we should tentatively do so here because the approach taken by Landco's counsel appears to be reducing the RMA's purpose and principles to a general 'balanced' or 'wise use' mantra.

[306] To bring all this full circle: in the earlier case about Long Bay - *North Shore City Council v Auckland Regional Council*[428] - the Environment Court wrote:

> The method of applying s5 then involves an overall broad judgment of whether a proposal would promote the sustainable management of natural and physical resources ... Such a judgment allows for comparison of conflicting considerations and the scale or degree of them, and their relative significance or proportion in the final outcome.

That formulation omits the earlier insight from the same decision (quoted above) that failing to comply with section 5(2)(a), (b) and (c) also restricts the ability to enable individual or community wellbeing. In *Baker Boys Limited et Ors v Christchurch City Council*[429] the Environment Court quoted the *North Shore* decision but added that Part 2 of the RMA requires an extra component which was that the single purpose of the Act also required the Court to:

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427 [1994] NZRMA 70 at 86.
428 [1997] NZRMA 59 at 94.
429 [1998] NZRMA 433 at para 109.

- giv[e] different weight to the matters identified ... depending on the Court's opinion as to how they are affected by application of s5(2)(a), (b) and (c) and ss 6-8 of the Act to the particular facts of the case.

The Environment Court explained that[430]:

> If this test differs at all from that stated in *North Shore City* ... it is in emphasising that the judgment of scale or proportion of the facts is guided by the (roughly decreasing) importance given by the Act to the elements in [sections] 5(2), 6 and 7.

We consider that the later point is correct, but in the light of *McGuire* the word 'guided' should be substituted by 'directed'.

430 [1998] NZRMA 433 at para 110 - section 8 of the RMA was not relevant in that case.

3.0 Predicted effects: assessment of Probabilities and consequences

3.1 Introduction

[307] In these proceedings the predicted effects in the Long Bay SP area relate to the following subjects:

Social wellbeing (see 3.3)
Geomorphology, topography and stability (see 3.4)
Terrestrial ecology (see 3.5)
Introduction to water issues (see 3.6)
Stream hydrology (see 3.7)
Freshwater habitat (see 3.8)
Freshwater biodiversity (see 3.9)
Proposed mitigation and enhancement - Revegetation and new wetlands (see 3.10)
Erosion: sediment production, transport and deposition (see 3.11)
The marine environment (see 3.12)
Heritage and whanaungatanga and other values (see 3.13)
The coastal environment and landscape (see 3.14)
Traffic and transport (see 3.15)

[308] Before we turn to consider the predicted effects we consider a preliminary legal issue which is one of the more difficult and confusing areas of resource management law in New Zealand.

3.2 The role of probabilities when making predictions under the RMA

The Environment Court's approach to predicting effects

[309] The probability of an alleged future event raises obvious questions for a local authority (and on appeal the Environment Court). The problems are not just with probabilities of more than 0.50 - the common law standard of proof - but particularly relate to probabilities of less than 0.50 (which, traditionally, common law Courts normally disregard in relation to 'facts').

[310] Consider a proposed activity which may endanger human lives. Assume the consent authority finds that the probability of the alleged effect is 16.67% (the roll of a dice). If the authority applied a 'balance of probabilities' standard of proof, that effect would be disregarded. In reality we are confident that a' consent authority under the RMA would implicitly rely on the probability, and would certainly assess the costs (one or more human deaths) if only subjectively, and then consider those matters in the exercise of its discretion under section 5 and Part 2 of the Act when deciding whether the purpose of the RMA was better met by declining than granting resource consent.

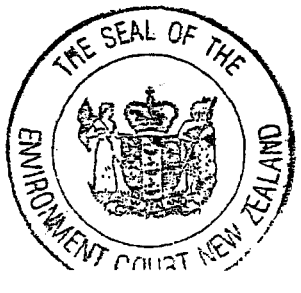
[311] We can carry out the same type of analysis for a proposed activity under the RMA, which is alleged to affect a species of native mammal. Assume also that the probability that the proposed activity would harm the species as a whole was between 25% and 49%. Section 32(3) of the RMA then appears to require the local authority or Environment Court to make findings as to both:

(a) the risk of acting to stop any proposed activity, that is the probability of the effect on the species and its costs, versus

(b) the risk of not acting (permitting the proposed activity, that is the probability of the positive effects and their benefits

- even though the probability of harm to the species is less than 0.50.

[312] Under the Town and Country Planning Acts and in the early years of the RMA the prediction of future events and the severity of their consequences was generally included (and in most cases still is, at least implicitly) under headings that can be generalised as 'Facts' or 'Effects'. The civil standard of proof, often described as being on the balance of probabilities, was applied to each relevant alleged 'fact', even where these were allegations about the future. Another approach was to say that a prediction was a matter of the Court's judgement as opposed to fact-finding so that questions about the standard of proof are not apt.



[313] Two decisions under the RMA have drawn attention (albeit in a somewhat confusing way[431]) to problems with those approaches. In *Shirley Primary School v Christchurch City Council*[432] the Court pointed out[433] the difficulties with applying the balance of probabilities test for facts to an effect[434] of low probability but high potential impact. And in *Clifford Bay Marine Farms Ltd v Marlborough District Council*[435] the Environment Court attempted to show the sort of problems that arise with pigeon-holing predictions as part of the overall discretionary judgement involved in most cases under the RMA. Simply differentiating between facts and judgements and the placing of predictions either in the category of 'facts' or in the category of 'judgements' is overly simplistic. In our view both propositions are misleading for several general reasons (and for more specific reasons which we discussed in relation to section 32 of the RMA in Part 0.0 [the introduction] of this decision).

[314] The general problems are:

(1) relying on a fact/judgement distinction overlooks that the finding of a fact by a Court is not a scientific exercise; it is itself quintessentially a matter of judgement. Dr Somerville referred us to a paper on 'The Weight of Scientific Evidence in Policy and Law' which states[436]:

> ... the "weighing instrument" for "weighing evidence is human cognition, which has never been calibrated to the task. In fact, "weighing evidence" has little if anything in common with weights and measures.

Every Court has to assess and judge a large variety of factors - credibility of witnesses; the strength, coherence and consistency of their evidence; the existence of contradictory evidence and so on; and to make judgements about each relevant matter as part of its fact-finding;

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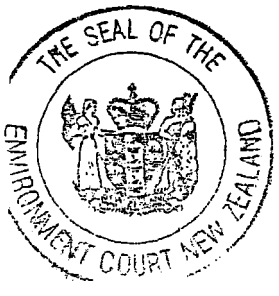
431 The Environment Court in those cases was, in retrospect, confused about how to take multiple related probabilities into account (although at least it was aware that is an issue).
432 [1999] NZRMA 66.
433 [1999] NZRMA 66 at para (135).
434 See section 3(f) of the RMA.
435 Decision C131/2003.
436 Dr S Krimsley [2005] 95 No. 51 *American Journal of Public Health* 5129 at 5.134.



(2) while we consider that predictions of future effects are not part of 'fact-finding' they are still (or should be) evidentially based in the same way that deciding past events is. In some ways predictions are more real than the findings of the Court about past events. The latter can rarely be disproven; whereas prediction of future effects may well be proved or disproved by what in fact happens. That has the obvious consequence that some of the findings by a consent authority (or, on appeal, by the Environment Court) will be proved in time to be correct or not. That verifiability/falsifiability in itself suggests those predictions - both as to probabilities and as to consequences - are factual questions which depend on evidence and judgments about that evidence, but are not questions of 'fact' in the legal sense;

(3) probabilities are not inherent qualities of events. As we have just stated, an event will happen or it will not. For our practical purposes a probability is simply a statement of our uncertainty when making a prediction.

Superior Courts

[315] The New Zealand Court of Appeal considered the standard of proof in relation to predictions in a non-RMA case in *Commissioner of Police v The Ombudsman*[437]. Cooke P (as he then was) stated:

> To place on the Department or organisation an onus of showing that on the balance of probabilities a protected interest would be prejudiced would not accord with protecting official information to the extent consistent with the public interest, which is one of the purposes stated in the long title of the Act ... To require a threat to be established as more likely to eventuate than not would be unreal. It must be enough if there is serious or real and substantial risk to a protected interest, a risk that might well eventuate. This Court has given "likely" that sense in a line of criminal cases, a recent example of which is *R v Piri* [1987] 1 NZLR 66.
>
> ...

437 [1988] 1 NZLR 385 at 391.

> Whether such a risk exists must be largely a matter of **judgment.** In that sense a reference to onus of proof is not fully apt: compare the observations in *McDonald v Director-General of Social Security* (1984) 1 FCR 354 about the inapplicability of adversary proceedings concepts, such as the onus of proof, in administrative proceedings. (Our emphasis.)

It is worth noting that Cooke P introduced the concept of risk when the Courts look into the future, because that concept is now increasingly and expressly[438] important under the RMA.

[316] Superior courts overseas have been generally consistent in their refusal to apply the civil standard to predictions of future effects. In a passage that is often cited, Lord Diplock wrote in *Mallett v McMonagle*[439]*:*

> In determining what [happened] in the past a court decides on the balance of probabilities. Anything that is more probable than not it treats as certain. But in assessing damages which depend upon its view as to what will happen in the future or would have happened in the future if something had not happened in the past, the court must make an estimate as to what are the chances that a particular thing will or would have happened and reflect those chances, whether they are more or less than even, in the amount of damage which it awards.

Obviously there are good policy reasons (reaching finality, minimising losses or costs[440]) for treating a past fact proved 'on the preponderance of probabilities' as certain. But that suggests that when looking at the future the concept of a standard of proof is not useful. It would be an unwise policy to treat as certain a 'fact' which has yet to occur and may never occur, especially if the probability is only 51% - near enough to the toss of a coin.

[317] The difficulties of applying the civil standard to predictions are confirmed by the same Judge, Lord Diplock, when giving the opinion of the Privy Council in *Fernandez v*

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438 See section 32 of the RMA (as amended by the Resource Management Amendment Act 2003).

439 [1969] 2 All ER 178 (HL) at 190-191 per Lord Diplock. See also *Davies v Taylor* [1974] AC 207 at 212 per Lord Reid; *Hotson v East Berkshire HA* at 793 per Lord Ackner.

440 D H Kaye, 'The error of equal error rates', *Law, Probability and Risk* (2002) Vol. 1 No. 1 at 3-8.

Government of Singapore[441]. In this case he referred to "the balance of probabilities" as[442]:

> ... a convenient and trite phrase to indicate the degree of certitude which the evidence must have induced in the mind of the Court as to the existence of facts, so as to entitle the Court to treat them as data capable of giving rise to legal consequences.

The learned Law Lord then continued:

> But the phrase ['the balance of probabilities'] is inappropriate when applied not to ascertaining what has already happened but to prophesying what, if it happens at all, can only happen in the future. There is no general rule of English law that when a Court is required, either by statute or at common law, to take account of what may happen in the future and to base legal consequences on the likelihood of its happening, it must ignore any possibility of something happening merely because the odds on its happening are fractionally less than evens.

That appears to be a clear statement of the law, equally applicable in New Zealand.

[318] Canada and Australia have similar approaches - see *Janiak v Ippolito*[443], a decision of the Supreme Court of Canada, and *Malec v C Hutton Proprietary Limited*[444], a decision of the High Court of Australia. More recently the Supreme Court of Canada confirmed in *Athey v Leonati*[445] that:

> [F]uture events need not be proven on a balance of probabilities. Instead they are simply given weight according to their relative likelihood, *Mallett v McMonagle .... Malec v C Hutton Proprietary Limited .... Janiak v Ippolito...*

With respect that is the only logical and scientifically consistent approach.

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441 [1971] 2 All ER 691 (PC).
442 [1971] 2 All ER 691 at 696 (PC).
443 [1985] 1 SCR 146.
444 (1990) 169 CLR 63.
445 [1996] 3 SCR 458.

[319] An important factor when considering the differences between predictions about the future and traditional 'fact-finding' by the Courts must be the recognition that there are many other more-or-less successful techniques for making predictions. Markets are largely about enabling people to act on their own predictions. With some obvious exceptions for externalities, some of which the RMA manages, markets are remarkably efficient at achieving that, in the sense that, given our legal system, markets allocate resources to the uses for which society values them most.

[320] As important in the present context is the efficiency of scientists in making predictions. Making a prediction (hypothesis) and testing it is at the heart of current scientific methodology. The medical profession has developed prediction of dose/response relationships to a high point of precision[446]. Ecologists have developed the ideas of eco-epidemiology[447]. Engineers work with margins of safety. In these proceedings Dr R G Bell, an experienced and well qualified engineer, wrote[448]:

> As part of assessing the risk (effects) of an activity, it is now becoming best practice to consider a range of moderate to severe environmental events and their probabilities in a probabilistic risk assessment to derive a distribution of impacts across a spectrum of return periods ... [citations omitted], and used for a wide range of other natural, public-health and human-induced hazards.

Giving all the above a sound theoretical basis, mathematicians have set out the foundations for making real-time predictions in their discussion of Bayes' Rule.

[321] We conclude on the authority of *Fernandez v Government of Singapore*[449] (which is binding on us) supported by the other Superior Court decisions cited that there is no such thing as a standard of proof for future events. All a local authority and, on appeal, the Environment Court can and should do is to make an assessment of the probabilities of a future event (given an array of frequencies and intensities). The Court should not confine the prediction to whether the event achieves a 'toss of the coin'

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446 See S N Goodman, 'Towards Evidence-based Medical Statistics' *Ann Intern Med* (1999) 130: 995-1004.

447 (US) Federal Judicial Center, 'Reference Manual on Scientific Evidence" 2nd Edition. (2000) and in particular its enclosed 'Reference Guide on Epidemiology' by M D Green, D M Freedman, L Gordis.

448 Dr R G Bell, evidence-in-chief para 2.2 [Environment Court document 54].

449 [1971] 2 All ER 691 at 696.

standard. Then the local authority must continue by working out the costs and benefits of the event so as to assess the risk as required by section 32 in particular and the Act in general.

[322] So the third task of a consent authority and the Environment Court, after determining the facts and ascertaining the applicable law and before turning to its overall discretionary judgement, is to find what the probability and costs of the relevant effects are. That should maximise the accuracy of the consent authority's predictions; minimise costs or risk (those are not the same things) as appropriate; and approximate best scientific methods of risk assessment. Of course it is in the nature of evidence to a Court that probabilities can often only be established with large margins of error. Our point here is that it is the approximate probability(ies) of any event (effect) which should be established regardless of what that probability is, and even if it is below 50% (0.5). If necessary the probability can be given as a range - e.g. 33% - 67% (0.33 to 0.67) probability as a medium likelihood: see the Schedule to *Clifford Bay Marine Farms Limited v Marlborough District Council*[450]. What is not useful is an arbitrary standard of acceptance of the probability as fact, i.e. whether on the Court's assessment the probability of the predicted event exceeds 50% (0.5).

[323] There are at least[451] three steps when predicting the risk of any proposed activity affecting natural and physical resources under the RMA. They are to assess:

(1) the nature of the proposed or existing activity and its context. This usually needs to be analysed in terms of spatial extent, intensity, and duration (all of which are obviously easier to assess for an existing activity than for a proposed one);

(2) whether there <u>is</u> a causal relationship between the activity and its 'effects' (and, often, the existence of confounding causes of the same sort of effect); and

(3) the risk of the effect, which also consists of three components -

(a) the probability of the effect;

450 Decision C131/2003 referring to the IPCC scale of probabilities.

451 AS/NZS 4360: 1999 <u>Risk Management</u> contains a much fuller generic guide for risk management.

(b) its consequences (its costs and benefits); and

(c) the relevant policy or objective which the risk impinges upon.

In practice one or more aspects of the analysis are often not challenged by any party, so a consent authority or the Environment Court does not have to make findings about all of them. For example in some cases, a party will, at least implicitly, concede there is a stressor which will cause an adverse effect, because the party proposes mitigatory action. Then arguments may focus on whether the mitigation is adequate to lessen the intensity, duration or extent of the stressor to an appropriate level so as to reduce the intensity of the effects.

3.3 Effects on social wellbeing

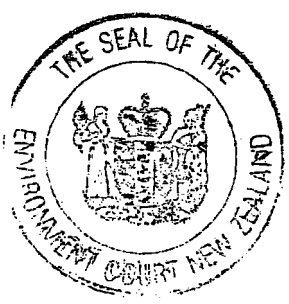
3.31 Introduction

[324] The Long Bay Society concentrated part of its evidence on the alleged effects of the structure plans on their members' wellbeing and that of the public. For its part Landco concentrated on certain aspects of wellbeing which it claimed would be better served by its structure plan: maximising the yield of dwellings, the probability of a supermarket being built, greater uptake of public transport systems, and superior urban design. We make our predictions about the last two points elsewhere in this Part under 'transport' and 'landscape' headings.

[325] Other aspects of wellbeing identified by Part 2 of the RMA are discussed extensively in the remainder of the decision.

3.32 Regional demand for housing and other infrastructure

[326] Housing demand in the Auckland Region was shown by Mr Shearer, a consultant geographer called by Landco, in a table 2 which he compiled which shows updated census figures and projections[452]:



[452] We have swapped the last two lines because as we understand it the number of dwellings is an inference from the lines (now) above it.

Table 2: Updated Auckland Region population, dwellings 1991-2006

Census year	1991	1996	2001	2006	2040?
Population	944,000	1,066,000	1,159,000	1,303,000[453]	2,000,000[454]
Average % Increase/yr	NA	2.6	1.7	2.5	1.3%
Household occupancy rate/dwelling	NA	3.0	2.93	2.96	2.7
Dwellings	NA	356,000	395,000	439,000	740,000

The table assumes a conservative increase of 1.3% per annum after 2006 to reach two million by 2040. In fact over the past 20 years, the region has equalled or exceeded that rate every year with the exception of 1987 and 1992[455] (both 1.2%). The increased average over the past 20 years is 2.2%. Mr Shearer concludes[456] and we accept that:

> What this means is that the urban form of the Auckland Region is changing faster than was projected in 1999, and consequently there is increasing pressure to provide urban development capacity, wherever it is available, at a faster rate.

[327] On the other hand the potential for the LBSPA to meet the quantity of housing demanded is limited. As Mr Mead pointed out for the NSCC, even if the Landco structure plan is implemented[457]:

> The difference is less than half a year's growth [for North Shore City], and a decision not to accommodate an extra 500 to 700 dwellings in the Long Bay area cannot be said to be of strategic significance.

Landco Structure Plan

[328] As for what the Landco structure plan could do to assist meet that projected demand, since no party disagreed with Landco's witnesses we predict that if the Landco

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453 Mr Shearer advised this figure came from Statistics NZ.
454 Auckland Regional Growth Strategy.
455 Source: Statistics New Zealand as quoted by Mr Shearer at his para 2.10.
456 Mr C M Shearer, rebuttal evidence para 2.12 [Environment Court document 3B].
457 Mr D W A Mead, evidence-m-chief, 2nd statement para 5.17 [Environment Court document 3C].

structure plan is put into place it is highly likely that there will be between 2,600 and 3,200 dwellings in the LBSPA[458].

[329] It is also probable according to the evidence of Mr M G C Tansley, a retail consultant called by Landco, that a supermarket of about 2,500 m^2 gross floor area will be built, in the village centre under the Landco structure plan. However, there are already two big supermarkets at Albany town centre, not more than 7 kms away, and there is the potential at that location for at least one more: *Cornerstone Group Limited v North Shore City Council*[459]. More fundamentally, while we accept that centres with supermarkets can be foci, we are not persuaded that a supermarket is necessary in Long Bay to create a social focal centre. Mr Mead put it well[460]:

> there's no evidence of community support for the notion ... that a supermarket-led centre is needed to create a focal point.

We find that it is unlikely that a 2,500 m^2 supermarket would be built at Long Bay because grocery companies tend not to build them that size any more. The only example of comparable size that Mr Tansley could point to was Northwood, Christchurch[461]. In any event we are not concerned about the size of Landco's Long Bay 5 (Village Centre) Zone as it can be readily changed and put to different uses. The important point is that policy 17.4.4(9) is met, i.e. a viable centre is likely under the Landco structure plan.

NSCC Structure Plan

[330] The Council's proposed structure plan[462] hopes for a future population of between 4,500 and 5,000. There is dispute over, whether that will be attained. That is because the yield from the NSCC SP was calculated on initial plans prepared before it had geotechnical advice as to the feasibility of the layout on them. At that stage the

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458 Mr C M Shearer, rebuttal evidence para 2.17 [Environment Court document 78A] - his actual range was remarkably precise: 2,607 to 3,138.

459 A42/2007 at paragraphs 40 and 41.

460 Mr D W A Mead, rebuttal evidence para 6.54.

461 Transcript pp. 753-756.

462 Yellow book 9: explanation and reasons to policy 17B.3.4.

NSCC calculated its structure plan would yield 2,000 dwellings (4,500 people)[463]. Mr Mead later[464] lowered the figure to 1,930 dwellings. For Landco, Mr Egerton[465] and Mr Bradbourne[466] estimated the NSCC SP yield significantly lower, at between 1,262 - 1,537 houses (a minimum of 2,840 people).

[331] Obviously if other relevant matters cause the area of residentially zoned land to shrink, the number of dwellings may fall also. However, as Mr J D Lunday, the architect and planner called for the OEG observed, a reduction in developable area does not necessarily result in a smaller number of dwellings[467]:

> If you go south of the [Vaughan's] creek there's about 100 hectares of developable land and some of it will have to be manipulated, some of it will have to be given up but it has got some environmental aspects. If you apply the densities in the [Regional Policy Statement] of centres that have bus, not regional centres, bus centres of 40 houses per hectare you reach - you exceed - well 30 houses per hectare, you exceed the expectations of the site, you get 3000 households. Now if they're making a play it should have a set that it is a localised centre then that's the sort of densities that you should be looking at.
>
> So I would say that there is the capacity to deliver a medium to high density development in a much smaller footprint which I think is one of the questions that wasn't really answered earlier, that satisfies the economic rationale of development, it satisfies the expectations for growth, but actually leaves two thirds of the site, they could be taken out of development and other management regimes placed over it or put into cluster development which I suggested in my evidence.

3.33 Effects of development on existing residents and visitors to the area

[332] We read the evidence of members of the Long Bay Society of their concerns about the effects of the structure plans on their enjoyment of, and passion for, Long Bay Regional Park and its wider natural environment. Mr Olsen, the experienced planner and recreation advisor employed by and called for the ARC wrote[468] of the 'high level of

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463 Ms C Davison, evidence-in-chief para 3.1 [Environment Court document 19]; Mr D W A Mead, evidence-m-chief para 11.14 [Environment Court document 3].

464 Mr D W A Mead, supplementary statement of evidence (17 July 2007) para 2(b) [Environment Court document 3C].

465 Mr P Egerton, evidence-in-chief section 6 [Environment Court document 23].

466 Mr A A Bradbourne, evidence-in-chief paragraphs 4.5 to 4.7 [Environment Court document 80].

467 Transcript pp. 1745-1746 [16 October 2007].

468 Mr N W Olsen, evidence-in-chief para 6.1 [Environment Court document 57].

public concern' about the structure plans. Cross-examined by Mr Kirkpatrick for Landco he acknowledged[469] that "... [the] issues are certainly highlighted by the prospect of change ...". We accept that our evaluation of the Society's witnesses and of Mr Olsen's evidence on this point must take into account that people do resist change simply on the basis of a psychological heuristic that 'change is bad'.

[333] Tempering that qualification is that people who resist change in the coastal area of the LBSP have this point strongly in their favour - that if this part of the coastal environment is modified adversely, there will then be nowhere to go within the North Shore City that gives the same quality of experience that the Long Bay Regional Park does at present.

3.4 Effects on geomorphology, topography and stability

[334] The geotechnical experts were agreed that[470]:

(1) in areas shown to be historically affected by slope instability, analysed levels of stability in those areas at present are likely to be below that required to meet council design criteria;

(2) that the low or marginal level of slope stability within some of the steeper parts of the Long Bay Structure Plan Area are such that (for anything other than a small number of carefully located sites) substantive remedial works would be required to provide stable building platforms.

However, they were also agreed[471] that both the proposed NSCC SP and Landco SP could be engineered to meet their suggested design criteria for site stability, and that the difference between the structure plans is largely in the scale of earthworks.

[335] Both the Landco and NSCC structure plans involve:

- lowering the crest of the Awaruku ridge and earthworks from Awaruku Stream to the crest to flatten and smooth the spurs and fill the gullies;

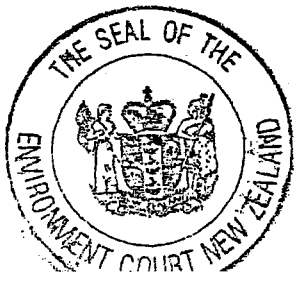
469 Transcript p. 1612 line 38.
470 Agreed statement No. 3 'Geotech" paragraphs 1.8 and 1.9 [Environment Court document 6/3].
471 Agreed statement No. 3 'Geotech" paragraphs 1.12 and 1.13 [Environment Court document 6/3].

- similar smoothing work proposed on the northern side of the ridge.
- an embankment to convey a new access road across Awaruku Stream and up onto the ridge. Upstream of the road both plans propose a stormwater retention pond(s) in the Awaruku catchment;
- a road crossing from a new village centre directly north across Vaughans Stream and up the slopes to connect to Vaughans Road;
- in addition to the cut-and-fill, extensive engineering to stabilise the slopes using such features as shear keys and palisade walls;
- creation of wetlands or ponds on the Vaughans Flats and in the lower Vaughans Valley;
- cutting, filling and smoothing work is on the Vaughans Slopes;
- cutting and filling on the Glenvar slopes.

[336] The predicted stability of the Long Bay slopes is strongly influenced by groundwater conditions within the near surface deposits, with movement occurring along the composite contact shear surfaces. Further, these slopes generally have marginal stability following prolonged wet weather or high intensity rainfall events where soils approach full saturation; and deforestation since land settlement and conversion to pasture is likely to have allowed more water to enter the slope and saturate the near surface soils more frequently.

[337] The experts finished rather inconclusively[472] by saying that 'significant judgement is needed in the selection of material strength'. However, their 'combined engineering opinion is that the site could be developed for either the Landco or NSCC options, the difference largely being the scale of earthworks required ...'.

[338] Mr M G Williams, a registered surveyor called for Landco, produced preliminary earthworks plans showing the proposed extent of cut-and-fill for the Landco SP and for the NSCC structure plan. A comparison of the likely volumes of cut-and-fill is:



472 Agreed statement No. 3 'Geotech" para 2.2(x) [Environment Court document 6/3].

	area	volume	surplus/deficit
NSCC[473]	102 hectares	$2.1 \times 10^6 m^3$	10% fill surplus
Landco SP[474]	180 hectares	$5.0 \times 10^6 m^3$	–

The earthworks contemplated by both structure plans make them very large projects (by New Zealand standards).

[339] We find it almost certain that neither the Landco structure plan nor the NSCC structure plan will fully achieve the relevant policies:

- not to significantly modify the existing landform (Design Principle 17.5.5(1));
- '... avoiding earthworks and vegetation removal affecting [significant] ecosystems and habitats' (Policy 8.3.2(6)).
- avoiding modification to the structure and form of natural waterways ... (Policy 8.3.5(6)).

[340] One other issue that is particularly relevant to the Vaughans Slopes (North) is Landco's claim that its structure plan will lead to greater stability of these slopes than the NSCC structure plan. The reason for its allegation is that the Landco structure plan contemplates major earthworks on the slopes which will stabilise them from the bottom up. In contrast it says the NSCC large lot development will create ad hoc sites with unsatisfactory individual site workings and likely ongoing stability problems. We prefer the evidence for Landco. We consider it is likely that the Landco structure plan will lead to greater stability of the slopes, and will also allow residential development to greater densities.

[341] All earthworks cause some sedimentation of waterways. Important issues in this case are how much sedimentation will be caused, how far it will be moved under different rainfall events, and what its effects will be on the various components of the

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473 Mr G A Alexander, evidence-in-chief paragraphs 5.2 and 5.3 [Environment Court document 45]. (We do not know if the figures reflect the NSCC's revised earthworks plan Exhibit DK-R4 dated 27 June 2007.)

474 Mr G A Alexander, evidence-in-chief paragraphs 5.2 and 5.3 [Environment Court document 45].

receiving environment (streams, wetlands, estuaries, and marine reserves) and on impacted species. We discuss predictions about sediment separately below.

3.5 Effects on terrestrial ecology

3.51 General effects and mitigation

[342] Most of the ecological evidence focussed on specific parts of ecosystems, or specific ecosystems such as Vaughans Stream. However, one ecological expert, Mr W B Shaw, called by the ARC, did make general predictions[475] as to the ecological effects of urbanisation. Most of them are dealt with by more specific experts, but his list included these additional potential effects:

> (a) Vegetation clearance for house sites, roads, accessways, and firewood, leading to increased fragmentation of natural areas;
>
> (b) Increased invasion of natural areas by invasive pest plants and other weedy species originating from residential houses, road margins, and the margins of public open space (where people often dump domestic garden refuse) ...;
>
> ...
>
> (f) Increased predation of indigenous fauna (birds, lizards, invertebrates) by domestic pets;
>
> (g) Disturbance of roosting or nesting avifauna by people and domestic pets;
>
> ...
>
> (i) Increased human visitation and associated recreational activities in adjacent natural areas;
>
> (j) Collection of indigenous plants from natural areas;
>
> (k) Encroachment into natural areas for gardens, boundary fences;
>
> (l) Increased incidence of fires originating from rubbish fires;
>
> (m) Noise disturbance of avifauna;
>
> (n) Increased planting of introduced species (e.g. Kermadec pohutukawa) that have the potential to hybridise and to alter the genetic makeup of indigenous species that occur naturally in an area.

No witness disagreed with him.

[343] Ecosystems objective 8.3.2 requires 'protection and enhancement' of ecosystems and design principle 17.5.6.8 seeks protection of '... significant ... ecological values of the area ...' so we consider Mr Shaw's more detailed[476] 'key principles to ensure

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475 Mr W B Shaw, evidence-in-chief para 9.1 [Environment Court document 50].

476 Mr W B Shaw, evidence-in-chief para 10.4 [Environment Court document 50].

protection and enhancement of ecological features' are appropriate for two reasons. First they are designed to mitigate the predicted effects identified above, and secondly because more than any other witness in the case Mr Shaw looked at the forested tributaries as a complex of terrestrial and water-based ecosystems, rather than as one or the other. The design methods he identified are to:

(a) protect all remaining natural areas including secondary forest and wetlands;
(b) protect all streams, as they provide the basis for an inter-connected network of natural areas;
(c) ensure that fish passage is maintained, and re-establish if it has been lost;
(d) identify riparian buffers to be protected;
(e) establish adequate buffers on existing natural areas;
(f) identify potential ecological linkages and ecological connections to be re-established;
(g) identify potential restoration areas/sites to provide buffers or re-establish ecological linkages;
(h) evaluate the need (or otherwise) for controls on domestic pets and pest plants in gardens.

Items (a) to (c) and (f) in that list are dealt with by more specific expert evidence. However, his support of buffers - items (d), (e), and (g) - was significant because their use was also suggested by subsequent freshwater ecology evidence and by landscape and planning evidence. We read little evidence about (h). Mr Corbett referred[477] to the danger of cats preying on lizard species.

[344] We now turn to consider effects on the terrestrial ecology of the LBSPA and find that there are four double sets of potential effects on terrestrial ecosystems from the proposed structure plans. They are the effects of earthworks during the subdivision and construction phases on, and the effects of the ultimate land uses on:

(1) the forest remnants within the LBSP area (most of which are marked dark green on plan "A" attached to this decision) but there are others, notably in the catchment of stream 9A;
(2) the birds of the wider area;
(3) lizards;
(4) effects along stream edges and along the boundaries of the LBSP area.

477 Mr K Corbett, evidence-in-chief paragraphs 5.6 and 5.7 [Environment Court document 73].

3.52 Effects on Forest remnants

[345] Ostensibly neither of the structure plans are going to affect the values of the forest remnants. As we found in Part 1.0 of this Decision there was largely agreement amongst the ecologists as to the high values of most of the forest remnants. However, we have doubts at two levels as to the protection which is likely to be given. First there is some doubt at the policy level - we discuss whether the reserves proposed by the Landco structure plan are likely to be created below. Secondly the evidence also causes us concern about some specific design features.

NSCC Structure Plan

[346] The NSCC structure plan's 'preliminary cut and fill' plan[478] dated 7 March 2007 was replaced by NSCC during the course of the hearing by a revised plan[479] dated 27 June 2007. It was Dr Kettle's evidence that the new plan better "....[takes] into consideration Low Impact Development principles and working with the existing landform/geological opportunities and constraints"[480]. The revised plan shows these features:

(1) Earthworks on the Glenvar slopes limited to cut and minor fill along the length of the proposed Glenvar link road and, to a lesser extent, for a preferred subdivision road parallel to Vaughans Stream towards the base of the Glenvar slopes. The latter road necessitates a crossing of Stream 9C but Streams 9A - B, Stream 3 - 3A and the north Vaughans tributaries between nodes 5 - 9[481] would be unaffected. With the possible exception of some minor incursions, proposed work would not impact areas shown as reserve or subject to Landscape Protection Area (Conservation) and (Ecological/Stormwater) overlays on the NSCC structure plan.

(2) The original NSCC SP showed an extension of Ralph Eagles Place south and west of Long Bay Primary School. The revised NSCC structure plan provides for a very significantly reduced area of earthworks in comparison

478 Annexed as GA01 to Mr Alexander's evidence [Environment Court document 45].
479 Dr D A Kettle. rebuttal evidence annexure DK - R4 [Environment Court document 12A].
480 Dr D A Kettle; rebuttal evidence para 9.5 [Environment Court document 12A].
481 Dr D A Kettle, rebuttal evidence annexure DK - R4 [Environment Court document 12A].

to that originally shown, with work limited to a relatively small area of fill at the northern end of the extended road. A minor part of the fill coincides with a Landscape Protection (Ecological/Stormwater) Area overlay, but we would not expect this to preclude the area's subsequent re-vegetation.

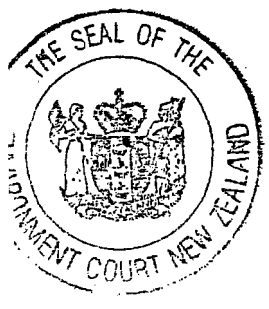
(3) To support the proposed road from Vaughans Stream north and uphill to Grannie's Ridge, the NSCC proposes to cut and fill the valley immediately west of the Homestead Spur. We discuss the appropriate treatment of this spur later. It is sufficient here to record that the cut and fill ignores the proposed Landscape Protection (Ecological/Stormwater) Area overlay[482] on stream 0.

(4) The revised plan (dated 27 June 2007) from Dr Kettle addresses the concerns raised by Mr Vaughan's cross-section 52 which[483] shows engineered fill at the southern end of the cross-section affecting land shown on NSCC SP: Designations and Special Provisions as a mix of proposed reserve and LPA: Conservation Area through which Vaughans Stream flows.

[347] We predict that it is likely that design principle, 17.5.6(8) [protect significant landscape and ecological values] would be met by a revised NSCC structure plan if it complies with the revised earthworks plan (and other amendments to the eastern boundary which we discuss later) and dealt with the Village Centre area in a way that kept earthworks away from Vaughans Stream and stream 2 and provided a suitable riparian buffer.

Landco Structure Plan

[348] Mr Brown, the landscape architect called by the NSCC, expressed concern about Landco's proposed earthworks. He wrote[484] in respect of the bush on the Vaughans Slopes (North) and Glenvar Slopes:



482 Mr G A Alexander evidence-in-chief at para 5.49 [Environment Court document 45].
483 Mr S Vaughan, evidence-in-chief SV03 and SV05 [Environment Court document 7].
484 Mr S Brown, rebuttal evidence para 5.12 [Environment Court document 13A].

> ... MI Rough goes on to suggest[485] that certain (unspecified) natural features which are outstanding within the Long Bay Structure Plan catchment will be protected and "become core components on which ecological and visual amenity values within the SPA will be preserved, protected and enhanced". I presume he is actually referring to such features as the stands of bush below Vaughans and Glenvar Roads. But the ridge slopes around all of these features would be substantially modified and I have serious concerns that far from preserving, protecting and enhancing these features, such changes will gradually destroy them. Indeed the stand of bush immediately west of Long Bay Primary School looks as if it will diminish in extent regardless of changes to overland flow paths, ground water tables and activities close to its vegetative drip lines.
> [Footnote added]

[349] Because his evidence assisted us evaluate those claims we were grateful that Mr M G Williams (for Landco) predicted the extent of the earthworks which would be necessary to implement the Landco structure plan. We note that Mr Williams stated[486] that the earthworks 'requirements'- were one of the dominant drivers of the Landco structure plan. Mr Williams' Plan 202[487] shows the land on the spurs either side of the wedge 'reserve' around part of stream 1C being cut, and fill placed in the adjacent gullies. Another plan[488] (Plan 152) showed a palisade wall in the sides of the gully containing the proposed bush reserve [Vaughans Slopes (North)]. This was explained further by Mr J D Johnson, an engineer[489] called by Landco who, in response to questions from the Court, drew a (not to scale) illustration of a cross-section of the eastern forest gully (containing stream 1C) showing the cut from the spurs either side of it, and the palisade walls in the side of the gully. Our inspection of the gully showed it is separated from its neighbours by very thin spurs. We could not see how it would be possible to cut the top of the spurs, or to insert palisade walls in their sides without interfering with the existing (important) vegetation.

[350] We are also concerned that earthworks will take place within the dripline of the marginal vegetation along Vaughans Stream; in fact some may take place in the stream-

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485 Mr P Rough, evidence-in-chief para 247 [Environment Court document 30].
486 Mr M G Williams, evidence-m-chief para 3.1 [Environment Court document 30].
487 Mr M G Williams, Exhibit MW4 [Environment Court document 30[.
488 Mr M G Williams, evidence-in-chief Appendix 2: Plan 152 [Environment Court document 301]
489 See Ex 'JJ9'.

bed as Mr Alexander conceded[490]. Also for Landco Mr Williams referred to 'environmental constraints'[491] and to consultation with Landco's 'environmental witnesses'[492], yet it is difficult to match his plans with the mitigating features (retention of existing vegetation, 15 metre setbacks from streams and boundaries, and reserves) mentioned by Landco's ecological and other experts. For example Mr Williams' Plans 150 and 151 (part of his Appendix 2) shows a red dashed line which indicates, according to his 'Legend', the extent of earthworks. Keeping in mind the plans' "Concept Design Only" caveat we note:

(1) that red line touches the channel of Vaughans Stream from the north side and crosses it from the south side;

(2) the red line is crossed by 'foundation works' either side of the proposed crossing of Vaughans Stream, so the red line appears to be incorrectly placed; in two places the "foundation works" impinge on the Stream;

(3) that at one point a shear key due north of Long Bay College is sited within five metres or less of Vaughans Stream;

(4) answering a question from the Court about his plan 151 relating to the area northwest of Long Bay Primary School, Mr Williams confirmed[493] that earthworks would take place in the stream bed;

(5) other locations where fill would be placed in or close to Vaughans Stream in conjunction with a long shear key are evident from the plans[494]. We refer in particular to the western-most extent of fill on Dr Kettle's drawing on the main stem near Stream 10; at Node 8; and between Nodes 6 - 7.

[351] Similar issues arise in respect of stream 9A and stream 4. Landco's earthworks plans do not show stream 9A as being reserved. To the contrary the Landco earthworks plan[495] shows earthworks enveloping stream 9A right up to where it joins Vaughans Stream; and the Landco structure plan map 'Designations and Special Provisions' has no reserve, landscape protection areas or private landscaped yards on stream 9A. In

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490 Transcript p. 1398, lines 14-27.
491 Mr M G Williams, evidence-in-chief para 3.1(a) [Environment Court document 30].
492 Mr M G Williams, evidence-in-chief para 3.2 [Environment Court document 30].
493 Transcript p. 1014 line 44.
494 Mr M G Williams' Drawing 151 and Dr Kettle's Annexure DK - R5.
495 Wood and Partners Drawing 151 (2 March 2007).

relation to stream 4, Mr Williams' drawing 152 shows the 'extent of earthworks' - and on our reading of the plan there are palisade walls in the stream 4 bush area.

[352] Subsequent to the hearing, the experts identified[496] a second area of native riparian vegetation in the headwaters of 9A. It can be seen clearly on a photograph in Dr Boothroyd's evidence[497] and has the following agreed description "... puriri canopy consisting of around five large puriri trees and an under canopy of young nikau, karaka and kohekohe with some pines and loquats on the edges". It is evident from the preliminary earthworks plans that the bush is likely to be lost under the Landco structure plan and unaffected by the revised NSCC plan[498].

[353] We conclude in respect of the Landco SP that, irrespective of other cumulative concerns about such adverse effects as sedimentation and reduction in fauna, on the evidence before us it is likely that both the Glenvar and the eastern forest remnants will be adversely affected by the earthworks and stabilisation methods proposed by Landco. In particular on the Glenvar Slopes:

- the main stem of Vaughans Stream;
- the last 90 metres of tributary 9A;
- the headwaters patch in tributary 9A;
- streams 9B and 9C[499]

- will all be earthworked.

We find that design principles 17.5.6(8) [protect ecological values] and (9) [exclude significant areas from development] are unlikely to be implemented. We find that the earthworks maps produced by Landco witnesses imply a high probability of significant encroachment into some of the high-value terrestrial sites on the Vaughans Slopes (North) and base of the Glenvar Slopes.

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496 Landco 19 February 2008: Joint Statement of Technical Experts: Riparian Vegetation of Tributaries, paragraphs 3.1 - 3.8.

497 Dr I Boothroyd, exhibit IB08 [Environment Court document 11].

498 Dr D A Kettle, rebuttal evidence Drawings DK-R4 and DK-R5 [Environment Court document 12A].

499 Dr D A Kettle, rebuttal evidence Drawing DK-R5 [Environment Court document 12A].

[354] The terrestrial ecologists agreed that it was desirable to link the forest remnants with each other and the bush in the Regional Park. However, there was some argument between them as to whether the NSCC or Landco structure plan would better 'achieve that. Although he did not see them as the focus of ecological corridors[500] Mr Slaven stated initially[501] that Landco's landscaped yards in its proposed 2A and 2B (Vaughans Slopes) Zone would be more functional connections than the NSCC's proposed enhancement areas. However, he conceded in cross-examination[502] (by Ms Campbell) that those yards would be regularly intersected and would directly connect neither to the forest remnants nor to streams. While the expert witnesses agreed that there is nothing of particular substance separating the intentions of the structure plans, we consider that Landco's SP is less likely to connect natural areas effectively than the NSCC structure plan.

[355] A similar theme was whether an ecological buffer on the Homestead Spur is desirable. Mr Slaven conceded[503] that a 10 to 15 metre wide buffer with the Regional Park is desirable as shown subsequently (on Exhibit MW 10).

[356] In relation to the long-term protection of the forest patches Dr Gardner, the botanist called for Landco, attached figures[504] to his evidence showing proposed reserves (35 hectares) and potential reserves (8.8 hectares) to protect and enhance the ecological values. He and other Landco witnesses considered the Landco SP created more reserves (potentially 43.8 hectares) than the NSCC structure plan (25.2 hectares). Indeed the main difference between the Landco and NSCC witnesses appears to concern the appropriate method of protecting and enhancing any native forest remnants. Landco proposed[505] that the NSCC buy all the reserves beyond what may be covered by financial contributions, whereas the NSCC proposed a number of different options.

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500 Transcript p. 1222 lines 32-33.
501 Mr D Slaven, evidence-in-chief 4.1 (pp. para 10 and 11) [Environment Court document 39].
502 Transcript p. 1223, lines 26-44.
503 Transcript p. 1233, line 32 to p. 1234, line 5 (the transcript reads not '15' but '50' metres but we recall Mr Slaven said '15').
504 Dr R O Gardner, evidence-in-chief Figures 2 and 3 [Environment Court document 40].
505 Mr D C Slaven, evidence-in-chief para 3.12 [Environment Court document 39].

[357] Mr M Van Jaarsveld, a NSCC parks and recreation officer, acknowledged the similarity in the structure plans' central open space spine provisions based largely on Vaughans Stream, but described key differences in other areas. He considered that the NSCC SP focuses more on community recreation space and neighbourhood reserves, with bush and archaeological resources protected by covenants. The Landco's SP, in his opinion, emphasizes bush areas and associated view corridors, with the majority of the proposed reserves located in gullies and steep terrain. He implied a tension between Landco's approach and aspects of Council's Open Space Strategy[506] which was expressly stated by Mr Mead, the strategic planner for the NSCC, when writing[507] of the difficulties the NSCC has had with structure plans at Albany and Greenhithe, and in particular the difficulties with:

> Reserve acquisitions which have had to cover the setting aside of bush areas, steeper terrain and areas for stormwater treatment, often at the expense of creating reserves for neighbourhood amenity.

3.53 Birds

[358] The experts seemed to agree that any increase in connections between the forest remnants - for example by further planting on the Vaughans Flats and along Vaughans Stream - would be positive for the avifauna. We predict it is likely that design principle 17.5.6(8) [protect ecological values] would be met by both the NSCC structure plan and the Landco structure plan.

3.54 Lizards

[359] If earthworks are carried out and then houses built on the pastoral slopes any skinks living there will be very likely destroyed if not moved first. The experts agreed that trapping and relocation (if any lizards are found) should be carried out before works begin in accordance with an approved Environmental Management Plan[508].

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506 Mr M van Jaarsveld, evidence-in-chief paragraphs 5.2 - 5.4 [Environment Court document 16].
507 Mr D W A Mead, evidence-in-chief para 3.48 [Environment Court document 3].
508 Mr W B Shaw, Exhibit 50.1 [Environment Court document 50].

3.6 Introduction to water issues

3.61 Should water issues be left to the ARC?

[360] Before we discuss the parties' predictions about the effects of various land uses on water in the Long Bay SP area, we should record that we heard a good deal of evidence about various alleged effects on fresh-, estuarine-, marine-water and ecosystems. During the hearing we were concerned that we were given so much material on water issues when the grant of water permits and related resource consents would be a matter for the ARC if and when they were applied for.

[361] After reading the evidence and hearing the cross-examination of witnesses we consider there are in fact good reasons for us to consider water quality and quantity issues as all parties urged. First the City Plan directs us to consider some effects on water quality and the ecology of Vaughans Stream now[509], and not to leave them as part of an 'end of the pipe' exercise by ARC[510]. That leads to the second point which is that land uses have a significant effect on water quality and the ecology of streams which pass through the land in question; and so comes within the City Council's functions[511] as a territorial authority of achieving integrated management of the effects of the use, development or protection of land generally and specifically on the maintenance of indigenous biological diversity[512]. Thirdly, because we read and heard excellent, and we consider important, evidence from witnesses from several parties we wish to record that evidence and our provisional conclusions on it. Others may either then benefit from the science we have recorded, or at least be in a position to analyse why our predictions are wrong (if they turn out to be so).

3.62 General predictions about effects on freshwater

[362] Summarising what he said were the general effects of urbanisation on freshwater ecosystems, Dr Boothroyd, for the ARC, predicted[513]:

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509 Design principles 17.5.5(5) and 17.5.6(1), (7) and (8).
510 Not that the ARC would necessarily limit its role in that way.
511 Section 31(1)(a) of the RMA.
512 Section 31(1)(b)(iii).
513 Dr I K G Boothroyd, evidence-in-chief para 5.2 [Environment Court document 11].

- Increased frequency and magnitude of flooding;
- Enlarging their channel cross-section to accommodate the increased flow;
- Increased stream channel erosion;
- Increased sediment deposition;
- Increase in contaminant loads; and
- A decline in biological diversity, a change in trophic structure, and a shift towards more pollution tolerant organisms within streams.

[363] In assessing the predictions about effects of development on the water ecology of the area, we must be careful not merely to predict what the outcomes would be under the structure plans in comparison with the existing situation, but also where it has been raised in evidence to compare the predicted outcomes with what the experts predict could be done with different land uses adjacent to the streams under an amended structure plan differently focussed on achieving the objectives and policies of the district plan, the RMA, and the statutory instruments in between. That approach is important because an over-arching issue in relation to freshwater habitat is the question of enhancement. Dr Parkyn, for the ARC, was aware of the statutory requirements to look at improving the freshwater ecosystems. Indeed her supplementary evidence[514] was wholly on that subject. In her concluding paragraph she wrote[515]:

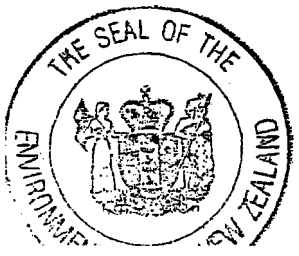
> I consider that the potential for rehabilitation of the streams in the Long Bay catchment is high, and that this should properly be considered as part of an assessment of their current state.

The freshwater ecologists for Landco disagreed, and we need to discuss that conflict.

3.63 The alleged effects of increasing impervious cover

[364] As background we read useful general evidence on watershed management and stormwater issues from Mr T R Schueler, an expert on catchment management from the USA, who has researched and written many papers or texts on those issues. He has extensive experience in directing 'watershed plans' in North America and off-lying

514 Dr S M Parkyn, supplementary evidence para 2.1 [Environment Court document 49A].
515 Dr S M Parkyn, supplementary evidence para 2.16 [Environment Court document 49A].



islands in the Caribbean and Hawaii. Mr Schueler's evidence for the NSCC traversed the following topics[516]:

(1) the 'Impervious Cover Model' - which uses the percentage of impervious cover to predict impacts on a catchment;
(2) the importance and sensitivity of 'zero-order' streams, that is small streams in the head of catchments which often lack flow;
(3) the impact of earthworks on stream hydrology;
(4) stormwater mitigation.

[365] Urban areas, as conventionally designed, contain many hydrologically relevant features not usually found in rural areas: a combination of more impervious cover (roofs, yards, drives, roads), storm drainpipes, compacted soils, and altered floodplains. Mr Schueler wrote that[517]:

> Th[at] combination ... dramatically changes the hydrology of urban streams. During storms, urban watersheds produce a greater volume of stormwater runoff and deliver it more quickly to the stream compared to rural watersheds.. The urban stream hydrograph[518] has a much higher and earlier peak discharge rate, compared to rural or undeveloped streams. In addition, stream flow drops abruptly after storms, and often steadily declines during dry weather due to a lack of groundwater recharge.

[366] Mr Schueler has developed what he describes as an "Impervious Cover Model". That uses the percentage of impervious cover in a catchment to predict the effects of urban development on streams in that catchment. Mr Schueler described it as follows[519]:

> The Impervious Cover Model (ICM) is a useful tool to diagnose the severity of future stream problems in a subwatershed. The ICM defines four categories of urban streams based on how much impervious cover (IC) exists in the subwatershed: *high quality streams, impacted streams, non-supporting streams* and *urban drainage.* The ICM is then used to develop specific quantitative or narrative predictions for stream indicators for each stream category (Figure 1).

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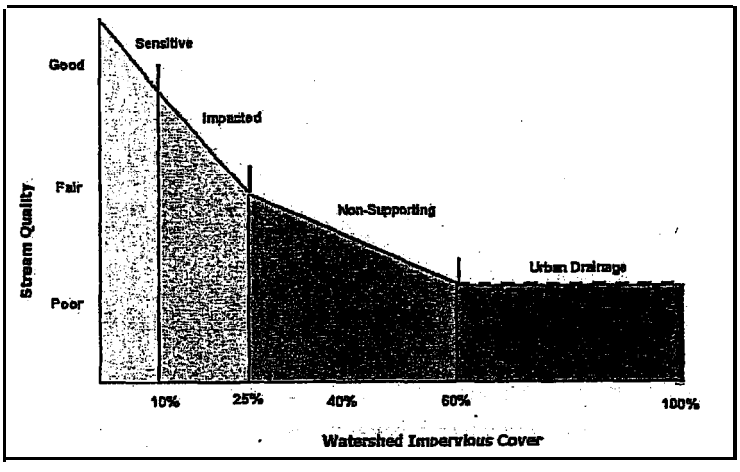
516 Mr T R Schueler, evidence-in-chief para 2.1 [Environment Court document 10].
517 Mr T R Schueler, evidence-in-chief para 3.2 [Environment Court document 10].
518 A graph of water flow against time.
519 Mr T R Schueler, evidence-in-chief para 3.1 [Environment Court document 10].

These predictions define the severity of current stream impacts and the prospects for their future restoration. Predictions are made for four kinds of urban stream impacts:

- changes in stream hydrology;
- alteration of the stream corridor,
- stream habitat degradation;
- declining water quality and loss of aquatic diversity.

Figure 1: Impervious Cover Model



[367] Mr Schueler fairly pointed out that his 'impervious catchment model' must be applied carefully. He wrote[520]:

> The ICM is a powerful predictor of stream quality, but it must be used appropriately. It is restricted to first to third order alluvial streams with moderate gradient and no major point sources of pollutant discharge. The ICM is most useful in projecting the behavior of numerous stream health indicators, but it is not intended to be accurate for every individual stream indicator. In addition, management practices in the contributing catchment or subwatershed must not currently be poor (e.g., **no deforestation,** acid mine drainage, intensive row crops, etc.). The last point is important; just because a subwatershed has less than 10% IC does not automatically mean that it will have good or excellent stream quality if past management were poor.

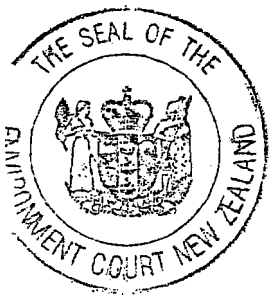
That last qualification is quite important because clearly much of the lower Vaughans Stream catchment and all of the Awaruku catchment within the structure plan area has

520 Mr T R Schueler, evidence-in-chief para 3.10 [Environment Court document 10].

been deforested, and are poorly managed. If water quality and stream ecology are important then they are inappropriately stocked with cattle which have access to streams and bush.

[368] However, in Mr Schueler's opinion[521]:

> ... based on my review of project maps, the stream ecology data contained in the ecological values report prepared by Kingett Mitchell (2005), and my personal inspection of Vaughans Stream and the Long Bay catchment on March 1, 2007, I can assert that it does in fact conform to the assumptions of the ICM, and its future quality will be extremely vulnerable to future catchment development, unless the exceptional mitigation measures outlined in the [North Shore City] Long Bay Structure Plan are effectively implemented.
>
> Therefore, the following future stream health predictions for Vaughans Stream are predicted *in the absence of effective stormwater mitigation:*
>
> (i) Existing high quality stream segments having less than 10% IC in their contributing drainage area will continue to function as **high quality streams,** and should be able to retain their hydrologic function and support good to excellent aquatic diversity. It may even be possible to improve stream condition as riparian cover increases and cattle grazing ceases.
>
> **(ii)** Stream segments that have 10 to 25% IC in their contributing drainage area will behave as **impacted streams** and show clear signs of declining stream health. Most indicators of stream health will fall in the fair range, although some segments may range from fair to good as riparian cover improves. The decline in stream quality will be greatest towards the higher end of the IC range.
>
> (iii) Stream segments that range between 25 and 60% subwatershed IC will become **non-supporting streams** (i.e., no longer supporting their designated uses in terms of hydrology, channel stability habitat, water quality or biological diversity). These stream segments will be so degraded that any future stream restoration or riparian cover improvements would be insufficient to recover stream function and diversity (i.e., the streams would be so dominated by subwatershed IC that they cannot attain pre-development conditions). *It is also highly probable that a biological decline would be observed in the tidal portion of the stream and portions of the marine reserve ...*
>
> (iv) Stream segments whose subwatersheds that exceed 60% IC would be eliminated or physically altered so that it merely functions as a conduit for flood waters. These **urban drainage streams** will have consistently poor water quality, highly unstable channels and



521 Mr T R Schueler, evidence-m-chief paragraphs 3.11 and 3.12 [Environment Court document 10].

> very poor habitat and biodiversity scores. In many cases, the stream segments would be eliminated altogether by earthworks or enclosure.
> [Italics added]

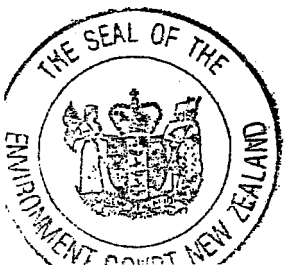
Mr Schueler was not cross-examined on those opinions or predictions.

[369] The freshwater experts agreed[522] that the Impervious Cover Model is, in general, a valid and well-established relationship (between ecological condition and impervious cover), but they differ about its ability to predict the future effects of the particular greenfield developments proposed in the two structure plans. Landco's witnesses disagreed with Mr Schueler's opinions as to the existing condition of the streams; and Landco's counsel in their closing submissions[523] described the ICM as "an academic, generalised concept (based largely on North American experience) that does not take into account the specifics of the Long Bay SPA". We treat Mr Schueler's predictions as raising relevant issues, but give them little weight when they have been challenged by specific evidence. Since all the experts agreed on the general validity of Mr Schueler's ICM we have used his predictions of the types of effects that may arise from urbanisation as a useful way of marshalling the long and complex evidence. But just because he predicts an (adverse) effect may occur does not mean we have accepted it will occur if we have other evidence on the issue. We discuss each issue in turn in the light of all the evidence on it.

3.7 Effects on stream hydrology

3.71 Introduction

[370] Mr Schueler's predictions as to the effects, in the absence of effective mitigating conditions, of urbanisation on stream hydrology are in this Table[524]:



522 Agreed Statement 13 "Freshwater Ecology" para 17 [Environment Court document 6/13].
523 Closing submissions para 5.58 [Environment Court document 85];
524 Mr T R Schueler, evidence-in-chief Table 1 [Environment Court document 10].

Table 1 Hydrologic and Physical Predictions According to the ICM				
Stream Hydrology Indicator	ICM Stream Classification			
	High Quality	**Impacted**	**Non-Supporting**	**Urban Drainage**
Stormwater Runoff as a Fraction of Annual Rainfall	2 to 7%	10 to 30%	25 to 60%	60 to 90%
Ratio of Post to Pre Discharge 100 Year Storm	1.0 to 1.05	1.1 to 1.5	1.5 to 2	2 to 3
Frequency of Bankfill Flood Events	1.0 to 1.2 per year	1.5 to 3 per year	3 to 7 per year	7 to 10 per year
Fraction of Original Stream Network Remaining	90 to 95%	60 to 90%	25 to 60%	10 to 30%
Fraction of Riparian Forest Buffer Intact	70 to 90%	50 to 70%	30 to 60%	Less than 30%
Stream Crossings	0 to 1 per stream mile	1 to 2 per stream mile	2 to 10 per stream mile	No stream to cross
Adapted from Schueler (2004)[525]				

Also, Mr Schueler made one other prediction - as to reduction in base flows by urbanisation - which is relevant to these proceedings.

[371] We read and heard evidence on the following hydrological issues:

- changes in run-off as a consequence of urbanisation;
- small floods;
- fraction of original stream network remaining;
- predicted changes to base-flows.

We discuss each in turn.

525 Mr T R Schueler 'An integrated framework to restore small urban watersheds'. Manual 1: *Urban Subwatershed Restoration Manual Series*. [Centre for Watershed Protection; Ellicott City, Maryland, USA]

3.72 Changes in run-off as a consequence of urbanisation

[372] The witnesses were not always consistent in their descriptions of the source of water in Vaughans Stream. We will use the term 'runoff' for quickflow - rain that has fallen and flows overland into channels and then tributary streams of Vaughans Stream. Rain and leaking stormwater that percolates into the shallow (soil) aquifer[526] as groundwater and then into the stream we will call 'base flow'.

[373] We discuss the effects of urbanisation on runoff first. Changes to run-off significantly change a stream's hydrology. Mr Schueler wrote[527] that:

> Perhaps the single most important alteration associated with land development is the effect of impervious cover on increasing the runoff coefficient of a site or catchment ... The sharp increase in stormwater runoff volumes is the primary causal agent for the decline in most urban stream indicators ...

Mr Jowett and Mr Shaver - witnesses called by the ARC - gave similar but more specific evidence to that of Mr Schueler.

[374] Those witnesses' opinions were challenged by Dr H Hudson, an engineer who did not give evidence-in-chief, but was called by Landco to give rebuttal evidence. In his opinion[528] the existing environment is as follows:

> Significant changes in runoff and (therefore) erosion rates probably occurred when the greater part of the forest in the Vaughans Stream catchment was cut down and converted into pasture; the current bankful capacity of Vaughans and Awaruku Streams exceeds that of other urban streams in Auckland, large reaches of Vaughans Stream only flow during and immediately after rain and they are of very poor quality as habitat for aquatic fauna; channel erosion and water pollution exists and will continue so long as cattle are run in the catchment.

Dr Hudson also considered[529] that as for changes to runoff caused by urbanisation:

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526 There is no significant discharge from the deep aquifer in the LBSP area.
527 Mr T R Schueler, evidence-in-chief para 3.3 [Environment Court document 10].
528 Dr H Hudson, rebuttal evidence para 2.3(a) [Environment Court document 35].
529 Dr H Hudson, rebuttal evidence para 2.3(b) [Environment Court document 35].

(i) Generalities such as percent of impervious area, or extent of site disturbance provide a poor picture of the extent of any probable change;

(ii) Detailed site specific analysis provides a more accurate assessment of probable effects;

(iii) These site specific evaluations [by other Landco witnesses] suggest that changes in runoff will be no more than minor.

We consider the site specific analysis and evaluations below, although we should record immediately that much of the site specific hydrographic (water flow) evidence for Landco depends on models whose assumptions are challenged so in a sense it too is theoretical.

3.73 Small floods

[375] One of Mr Schueler's predictions is that there will be more small floods ('bankfull flood events'). His prediction is that under urban drainage these would increase by a factor of 7 to 10. Such a scenario is very unlikely in the Long Bay SP area because no person is suggesting the whole area be urbanised. However, some increase in floods is likely on the basis of his uncontested assertion that the adverse effects increase as impervious surfaces are formed.

[376] At first sight it is not obvious why bankfull floods (as opposed to larger, overtopping floods) are of concern. One might expect that the impacts of a flood vary directly (or perhaps even exponentially) in proportion to the size of a flood; that is, the larger the flood the worse the damage. In terms of offshore effects for a stream that runs into the sea that may be the case, as we discuss later. However, for the stream itself that is not necessarily so. In Mr Schueler's opinion[530], and this was not challenged by anyone:

> This basic hydrologic response [increase in stormwater runoff volumes in proportion to increases in impervious ground cover] occurs during every storm, but the effect is most pronounced during smaller, more frequent storms. Consequently, urban streams experience an increased frequency and magnitude of flooding. Frequent flash flooding occurs after intense rain events and often causes chronic flood damage. The increased frequency of flooding from smaller storm events often has the greater impact on streams, as it transports sediments and causes channel erosion.

530 Mr T R Schueler, evidence-in-chief para 3.4 [Environment Court document 10].

[377] When the Court asked Mr Schueler to explain this he answered[531]:

> ... the very large storm events, the infrequent ones like the 10-year or 100-year storm event, do carry a fair amount of sediment because of their lack of frequency, they don't occur very often but also at those times they go out of the stream channel into the flood plains and their energy dissipates. But the form of the channel is actually defined by storms in the six-month to one and a half-year range, and so when you actually see a stream channel, that cross-section is really capable of taking storms of that frequency, and anything above that goes into the flood plain.
>
> So those storms define the morphology or the shape of the stream channel, and the effect of impervious cover is to increase the frequency by which what were formerly very small storms, ... now cause channel erosion.

For the ARC, Mr H E Shaver was of the same opinion[532]: that it is smaller storms which primarily cause stream channel erosion.

[378] We had other, more specific, evidence on small floods and more frequent rainfall events. For Landco Mr Cochrane carried out some limited modelling which suggested that peak flood flows would not be more than existing peaks. Mr Cochrane's analysis was criticised as being inadequate on a number of grounds by Dr Kettle:

(1) the ARC mode1[533] used by Mr Cochrane is 'primarily designed for calculation of peak flood flows and design of [infrastructure]'[534];

(2) "Mr Cochrane's conclusions are based on an assessment of peak flows of 2 and 10 year events, and only on two single minor [i.e. more frequent than a two year event] storm events, and hence do not cover the full hydrograph"[535];

(3) a review of Mr Cochrane's data[536] indicated that the model used:

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531 Transcript p. 348 [19 July 2007].
532 Mr H E Shaver, evidence-in-chief para 8.4 [Environment Court document 51].
533 ARC's TP 108.
534 Dr D A Kettle, rebuttal evidence para 5.2 [Environment Court document 12A].
535 Dr D A Kettle, rebuttal evidence para 5.2 [Environment Court document 12A].
536 Dr D A Kettle, rebuttal evidence para 5.9 [Environment Court document 12A].

- was under-predicting peak flows [by] at least 30%
- concentrates on peak flows, not volumes (and we explain our understanding of the significance of that shortly); and
- shows velocities that are almost all greater than the lower stated threshold velocity of 0.6 m/sec;
- relies[537] on meeting the thresholds set in the ARC's technical publication TP 10[538] which is not necessarily appropriate in areas of ecological significance because it is "... only meant to be a minimum standard"[539].

(4) while a retention pond will reduce velocities in the stream for a short period at the peak of the rainfall event, it later increases velocities and for longer[540] compared with velocities in the unchanged environment.

All those matters are of concern because it was Dr Kettle's unchallenged evidence that the ratio of peak discharge of stormwater after urbanisation to the peak discharge before urbanisation is greatest for rainfall events in the 0.2 year to 2 year recurrence interva1[541].

[379] In the end Dr Kettle returned to his initial position (as stated in his evidence-in-chief) which was that there are so many problems with the modelling of flows for Vaughans Stream that it is preferable to use the holistic impervious cover model. In his rebuttal evidence he showed[542] that, after allowing for the mitigatory treatment contemplated by each structure plan, the effective imperviousness of the two structure plans compared with the current situation at the freshwater/tidal interface are:

Current land use	10%	effective impervious land cover
NSCC structure plan	16%	effective impervious land cover
Landco structure plan	30%	effective impervious land cover

537 Dr D A Kettle, rebuttal evidence para 5.1 [Environment Court document 12A].
538 Dr D A Kettle, rebuttal evidence para 5.1 [Environment Court document 12A].
539 Mr H E Shaver, evidence-in-chief para 7.6 [Environment Court document 51].
540 Dr D A Kettle, rebuttal evidence para 5.11 [Environment Court document 12A].
541 Dr D Kettle, rebuttal evidence para 5.3 [Environment Court document 12A].
542 Dr D A Kettle, supplementary evidence 18 July 2007 para 3 and Revised Rebuttal Figure 4 [Environment Court document 12B].

We accept that evidence and predict that those will be the approximate percentages of impervious land cover under the two proposed structure plans. We note that the NSCC structure plan places the Long Bay structure plan area's streams into the 'impacted category'[543] and the Landco structure plan into the non-supporting streams category. However, it is important to realise that in the lower catchment (including subcatchments 0, 1, 2, 3, 4 and possibly 9) the streams are so degraded now that Dr Keesing estimated them as being equivalent "to a 40% impervious cover situation"[544].

3.74 Length of stream lost

[380] Mr Schueler's general prediction as to reduction in the amount of the original stream network remaining under urban use was made more precise by other witnesses who took into account only the proposed areas of urbanised land. On Dr Keesing's calculations the total length of stream channel in the Vaughans Catchment to be lost under the Landco SP will be 7,470 metres[545], and under the NSCC SP 3,779 metres. Given Dr Keesing's total length of streams in the catchment (excluding the Awaruku tributaries within the structure plan area) of 33,770 metres then the two plans represent percentage losses as follows[546]:

NSCC SP	11%
Landco SP	18-20%

The latter figure includes an allowance for Landco's proposal to recreate a stream channel for stream 1B (Dr Keesing 7.05). The figure is dubious for two reasons, first because there is doubt about the accuracy of the total length of existing streams, and secondly because there is no certainty that the Landco proposal will gain the necessary consent from the ARC. We therefore predict these figures as a minimum very likely to be exceeded.

543 See Mr Schueler's Figure 1 in para [48] of this decision.
544 Dr V Keesing, Rebuttal evidence para 3.9 [Environment Court document 37A].
545 Dr V Keesing, evidence-in-chief para 12.9 [Environment Court document 37].
546 Dr V Keesing, evidence-in-chief para 15.33 [Environment Court document 37].

[381] In fact Dr Keesing did not use his figures as to stream length lost to draw any conclusions about the sustainability of either of the structure plans. Instead, for the ARC, Dr Parkyn, a freshwater ecologist at NIWA, used Dr Keesing's figures for that purpose. Because it is the area of streambed lost that is important, Dr Parkyn attempted to calculate the quantity of stream area that would be needed to compensate for the stream areas lost under the two structure plans. She concluded[547] that neither plan achieves the mitigation ratio that she calculated to replace the functions lost (1:7.8). Dr Parkyn's mitigation ratio was criticised on several grounds including that it was not yet tested or peer-reviewed. We put no weight on it for the purpose of this proceeding for those reasons. However, we consider the concept is potentially a very useful technique.

[382] We do find, based on the remainder of Dr Parkyn's evidence, that:

(1) both structure plans reduce the stream length and area in the last natural stream in North Shore City that flows into the Hauraki Gulf;
(2) both structure plans reduce the length of remaining rural streams in the Auckland Region, the Landco structure plan by about 68% of current yearly modification at 2000-2004 rates[548];
(3) rehabilitation is often not successful.

The potential importance of these findings is to make the Court concerned about the cumulative effects of the structure plans.

3.75 Predicted changes to base flows

[383] While many of the concerns about urbanisation of the lower catchment are about **stormwater** quality and quantity, a further complication in this case is that attempts to deal with stormwater may reduce the **base flow** in the existing streams. As explained earlier, base flow is the component of stream flow that infiltrates into the ground and reaches a stream slowly[549]. In low flow conditions groundwater inflow will generally equate with main stem volumes[550]. The technical experts were agreed, and we accept,

547 Dr S M Parkyn, evidence-in-chief para 6.15 [Environment Court document 49].
548 Dr S M Parkyn, evidence-in-chief 8.7 [Environment Court document 49].
549 Mr P R Cochrane, evidence-in-chief para 2.3 [Environment Court document 34].
550 Transcript p1124 lines 5 - 10: cross-examination of Mr Cochrane.

that "changes in base flows are important and need to be considered in the assessment of effects on the receiving streams"[551]. Mr Cochrane, the scientist specialising in stormwater management called by Landco, acknowledged that impervious surfaces created by urban development typically reduce water infiltration to the ground and contributions to groundwater. He explained how this process has the potential to reduce stream low flows (base flows) which can in turn adversely affect the water quality and ecology of surface water bodies.

[384] Mr Cochrane helpfully sought to quantify the effect which the NSCC and Landco structure plans might have on groundwater inflows, using different predictive methods. His analysis divided the catchment of Vaughans Stream into four 'reaches'. These are ostensibly shown[552] on his Figure 1 but in fact some of the detail on Figure 1 is impossible to read clearly. Transplanting the information from his map to Map "A" attached to this decision, as far as we can see Mr Cochrane's reaches are as follows:

- upper reach is the whole catchment down to about node 9 on plan "A";
- upper mid-reach is the catchment (north and south of Vaughans Stream) between about nodes 9 and 4 (see plan "A");
- mid-reach is from about node 4 down to about node 3.

Mr Cochrane then estimated groundwater discharges into the different reaches of Vaughans Stream as follows[553]:

• upper reach	1 litre/second
• upper mid-reach	0.7 litre/second
• mid-reach	0.5 litre/second
Total	2.2 litres/second

551 Stormwater Management Experts' Joint Statement para 4.2.
552 Mr P R Cochrane, evidence-in-chief p. 11 [Environment Court document 34].
553 Mr P R Cochrane, evidence-in-chief Table 1 (p. 21) [Environment Court document 34].

So his initial calculation of total ground water (base flow) contribution to Vaughans Stream was approximately 2.2 l/s (comprising input from three upper reaches)[554]. Mr Cochrane then compared that figure with low flow measurements for the stream recorded at the ARC's lower flow monitoring site[555]. The results ranged from "about 0.6 l/s to 3.6 l/s"[556] although the estimated error rate [+/- 50%] for the low flow measurements detracts somewhat from their usefulness.

[385] Mr Cochrane then gave[557] the following results for estimated ground water discharge into Vaughans Stream for a "greenfield" and two structure plan scenarios in relation to the two reaches affected by the proposed earthworks on the Glenvar Slopes:

Reach	**Greenfield**	**NSCC SP**	**Landco SP**
Upper mid reach	0.7 L/s	0.5 L/s	0.4 L/s
Mid reach [~ 750m]	0.5 L/s	0.1 L/s	0.1 L/s
Total	2.2 L/s	1.5 L/s	1.4 L/s

He also noted that his table for the mid-reach under the NSCC structure plan "[a]ssumes that 25% of the length of Vaughans Stream along its south bank and contributing catchment will be undisturbed by earthworks". Setting the footnote's imprecision aside, it was Mr Cochrane's opinion that the reductions predicted from the Landco structure plan for groundwater discharges in the upper mid-reach and mid-reach sections are "... small and unlikely to be discernable"[558]. We do not know what he means by that. His scientific conclusion was that there would be "... a reduction in base flow of approximately 36% under the Landco SP and 32% under the NSCC SP"[559]. In his opinion the percentage base flow reductions cited above are similar because - despite the NSCC SP having a reduced urban footprint - its earthworks "would see a substantial modification of [the] shallow aquifer system, particularly adjacent to the Vaughans

554 Mr P R Cochrane, evidence-in-chief para 4.43 [Environment Court document 34].
555 From Mr Cochrane's evidence-in-chief Figure 1 and Annex 2 this appears to be located at or near the downstream end of the lower mid-reach section.
556 Mr P R Cochrane, evidence-in-chief para 4.44 [Environment Court document 34].
557 Mr P R Cochrane, evidence-in-chief table 2 [Environment Court document 34].
558 Mr P R Cochrane, evidence-in-chief para 4.54 [Environment Court document 34].
559 Mr P R Cochrane, evidence-in-chief para 4.56 [Environment Court document 34].

Stream"[560]. However, his view did not acknowledge Council's intention (perhaps because he did not know about it) to re-visit Mr Riley's preliminary cut and fill design[561] with the objective of avoiding earthworks in proximity to the stream[562].

[386] When using an alternative calculation method - annual water balance - Mr Cochrane predicted a base flow in Vaughans Stream of some 7 l/s. For the Landco SP proposal he predicted this would reduce to some 5 l/s (a 30% reduction) and that under the NSCC SP the corresponding figure would be in the order of 6 l/s" (a 17% reduction)[563]. The difference in predicted base flow reduction using this method is approximately 45%; a not insignificant difference to which Mr Cochrane surprisingly did not avert in his conclusions[564]. The comparative difference is also likely to be larger with the NSCC's amended earthworks plan for the Glenvar Slopes.

[387] We have some difficulty with Mr Cochrane's contention that groundwater flows of between 2.2 l/s and 5 - 6 l/s would constitute "... only small inputs of ground water during low flow or base flow periods"[565] given the main stem low flow data previously described and Mr Cochrane's agreement in cross-examination that the Vaughans Stream low flows reduce to "about 5 l/s"[566]. In other words the data suggest that the low flows are, as we would expect, mainly supplied by groundwater, as Mr Cochrane later acknowledged[567].

[388] Mr Shaver, for the ARC, stated that Mr Cochrane's 36% base flow reduction prediction for the Landco SP was relatively close to his own. However, he calculated that NSCC's "... proposal to recondition soils in addition to its expected impervious surfaces would reduce base flows by only 14%". Mr Shaver considered that this would constitute a significant difference between the two proposals "... and represent a significant reduction in stream base flow if development were done in accordance with

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560 Mr P R Cochrane, evidence-in-chief para 4.55 [Environment Court document 34].
561 Dated 7 March 2007.
562 Mr J Heijs, evidence-in-chief Annex 6 [Environment Court document 9].
563 Mr P R Cochrane, evidence-in-chief para 4.60 [Environment Court document 34]. Note: more accurately 28.6% and 14.3% respectively.
564 Mr P R Cochrane, evidence-in-chief para 4.65 [Environment Court document 34].
565 Mr H E Shaver, evidence-in-chief para 4.63 [Environment Court document 51].
566 Transcript p1123 lines 34 - 44.
567 Cross-examination of Mr Cochrane [Transcript p. 1124].

the Landco Alternative SP"[568]. The similarity between Mr Shaver's NSCC SP prediction and Mr Cochrane's result using the annual water balance method is notable.

[389] Despite Dr Hudson's reliance on them (discussed above), Mr Cochrane's calculations were a modelling exercise and therefore depended on various assumptions (e.g. as to permeability of the soil). Slightly more rooted in site-specific analysis (and based on unchallenged assumptions) was a report referred to by Dr Kettle[569] - the 'Long Bay Water Services Summary Report, Appendix E - Long Term Time Series'. As the last few words of its title suggests, it uses actual rainfall records over time. This model compared three scenarios for tributary "8B"[570] of Vaughans Stream. They were[571]:

- pre-developed scenario;
- mitigated development (i.e. with permeable pavings and rain gardens);
- unmitigated development.

The base flow rate comparisons derived were shown as percentages of the pre-developed base flow (i.e. the first column below)[572]:

Pre-developed base flow	Mitigated development base flow	Unmitigated development base flow
100%	70-80%	25 - 50%

We deduce that even a mitigated development base flow will be at least 20% lower than the pre-developed base flow.

[390] We were also assisted on the subject of base flows by evidence from Mr Jowett for the ARC. He confirmed Mr Cochrane's evidence that impervious conditions associated with urbanisation typically "... reduce[s] base flows and increase[s] the

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568 Mr H E Shaver, evidence-in-chief para 10.14 [Environment Court document 51].
569 Dr D A Kettle, rebuttal evidence para 5.4 *et ff* [Environment Court document 12A].
570 We cannot certainly identify which stream this is: we assume it is the un-numbered stream between streams 8 and 10 on the true left (northern) bank of Vaughans Stream.
571 Dr D A Kettle, rebuttal evidence para 5.6 [Environment Court document 12A].
572 Dr D A Kettle, rebuttal evidence para 5.6 [Environment Court document 12A].

frequency of low flows". However he cautioned, in an even handed manner, that overseas studies have not always detected an urbanisation effect on base flow as:

> ... the reduction in infiltration is often offset by the increase in flow caused by leakage from the water supply network and run-off from activities such as garden watering and car washing[573].

Mr Jowett concluded that while[574] "... the Landco proposal to divert stormwater from the Glenvar area to a wetland further downstream[575] will protect the low gradient section of stream ... from erosion, it will reduce base flows by up to one third". He considered that this reduction would have a significant effect on the quality and amount of habitat for adult inanga and bullies.

[391] We note from Dr Kettle's evidence,[576] and the Long Bay Catchment Management Plan[577] provided by the Council, that the NSCC SP does not propose a similar "exporting" of Glenvar stormwater, at least from the catchments of Streams 9A - C. We were not persuaded by Mr Cochrane's rebuttal[578] in these areas as he focused principally on the propensity of stormwater pipes to "capture" groundwater as opposed to groundwater infiltration and related base flow effects. Mr Cochrane also maintained his position[579] that both the NSCC and Landco SP's "...would result in similar effects on low flow in the upper mid-reach section of Vaughans Stream, due primarily to the extent of earthworks required under both structure plan proposals". We find this assertion at odds with the graphic evidence of Mr Brown on the same subject and Dr Kettle's detailed evidence on impervious surface differences as between the structure plans for Catchments 3 and 9A - 9C [580]. In any event Mr Cochrane's evidence on the NSCC structure plan has been out-dated by the NSCC's amended design and earthworks plans for the Glenvar Slopes which now show the main access road following a

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573 Mr I Jowett, evidence-in-chief para 2.6 [Environment Court document 48].
574 Mr I Jowett, evidence-in-chief para 5.17 [Environment Court document 48].
575 Mr I Jowett, evidence-in-chief Figure 3 [Environment Court document 48].
576 Dr D A Kettle, evidence-in-chief para 7.1 and Annexure DK06 [Environment Court document 12].
577 Long Bay Catchment Management Plan, NSCC [August 2006].
578 Mr P R Cochrane, rebuttal evidence paragraphs 3.18 - 3.19 [Environment Court document 34].
579 Mr P R Cochrane, rebuttal evidence para 3.21 [Environment Court document 34].
580 Mr S Brown, evidence-in-chief Annex 13 [Environment Court document 5] and Dr D Kettle, evidence-in-chief Annex DK15 [Environment Court document 12].

northeast running ridge between catchments 3 and 9, and less earthworks in both Catchments[581].

[392] Finally the other ARC witness on this issue was Dr Parkyn. She referred[582] to research development in Melbourne, Australia, and the adverse effects of piping stormwater away from catchments[583] which she thought[584] was 'particularly relevant to the Long Bay situation'. She acknowledged[585] in cross-examination that if the Landco structure plan proposed a treatment train (which is what we assume Mr Kirkpatrick meant when he referred to "... deal[ing] with stormwater water run-off in a manner similar to ... North Shore's proposal" she would support it.

[393] However, the Landco structure plan does not propose a full treatment train for the Glenvar Slopes. Our understanding is that the Landco structure plan still proposes to pipe water away from that area. In respect of that we accept Dr Parkyn's conclusion[586] on this issue:

> I support the view that recharging sub-surface flows and maintaining near-normal flows to the Vaughans Stream from its tributaries is a critical objective, and can be achieved by LID techniques, and that piping of streams to a point lower in the catchment could put the mid section of Vaughans streams and tributary streams at risk of unnaturally low flows.

3.76 Mitigating stormwater effects

[394] The stormwater expert witnesses (Mr Cochrane, Mr J Heijs, Dr Kettle, Mr Schueler, Mr Shaver, and Dr R White) agreed[587] on these six 'principles' for stormwater management:

1. *Keep post-development* conditions as close as practical *to greenfield* conditions, including both storm flows and base flows.

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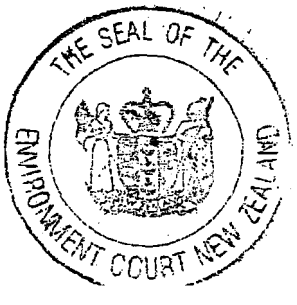
581 See Dr D A Kettle, Ex DK R-4 Preliminary Cut and Fill (27 June 2007) [Environment Court document 12A].
582 Dr S M Parkyn, evidence-in-chief para 2.10 *et ff* [Environment Court document 49].
583 Dr S M Parkyn, evidence-in-chief para 2.13 [Environment Court document 49].
584 Dr S M Parkyn, evidence-in-chief para 2.13 [Environment Court document 49].
585 Transcript (10 October 2007) p. 25.
586 Dr S M Parkyn, evidence-in-chief para 2.13 [Environment Court document 49].
587 Agreed statement 11 "Stormwater" para 5.1 [Environment Court document 6/11].

2. *Reduce impervious areas* as much as practical. Relatively small increases in imperviousness (above 5 to 15% imperviousness) have a significant detrimental impact on the receiving environment.
3. *Focus on treatment at-source* rather than end-of-pipe.
4. *A treatment train* approach is most desirable. This means that the stormwater flows through more than one treatment technology before discharging into the environment.
5. To maintain, or improve, the health of the receiving environment, stormwater management needs to address aspects of water quality, volumes and peak flows over the *full range of 1 in* 3 *month to 1 in 10-year rainfall events.*
6. Relatively few methods are able to reduce increases in *stormwater volumes* with increasing impervious areas - that is, revegetation, rainwater use or infiltration.

Despite those principles both structure plans increase imperviousness to an 'impacted' state or worse in Mr Schueler's Figure 1 quoted earlier.

[395] The experts agreed that stormwater management is an important issue in these proceedings and that an 'end of the pipe' approach is insufficient. They agreed that a full treatment train which would manage stormwater at all stages from when it first falls as rain to when it discharges is desirable. The train involves collecting rainwater (from roofs) in tanks, rain-gardens both on private land and in road-side or centre berms, using pervious paving and roadside swales, separate - 'off-line' - collection ponds, sediment traps and flocculating (at least in the bulk earthworks phase) equipment - and final discharge into Vaughans Stream (or Awaruku Stream) via a mix of point and non-point sources.

[396] We find the Landco's witnesses inconsistent and confused on the question of the Landco structure plan's commitment to a full treatment train for stormwater. Dr Keesing made a number of statements in his evidence-in-chief[588] which show he considered that Landco's structure plan would implement an "at source treatment train approach". In his rebuttal evidence he referred to the Landco structure plans "complete treatment train"[589].



588 Dr V F Keesing, evidence-in-chief paras 2.10, 15.6 and 15.29 [Environment Court document 37].
589 Dr V F Keesing, rebuttal evidence para 4.5 [Environment Court document 37A].

[397] We think Dr Kettle fairly summarised the Landco structure plan position and the confusion of the Landco witnesses when he wrote[590]:

> Mr Smith also clearly outlines in his evidence Table 10.1 that the only lots on which Landco propose on-site stormwater controls (rain tanks, rain gardens, permeable paving etc.) are Landco's Long Bay Zone 1A and 1B. These areas are situated in the "upper" catchment and "middle" catchment north of Vaughans Stream, both in areas not predominantly owned by Landco.
>
> Landco's Zone 1A and 1B areas only account for approximately 12% of the Landco Structure Plan impervious area. The other 88% of impervious areas do not have any requirements for "at source treatment train" methods such as rain gardens: rather, stormwater gets piped to wetlands at the bottom of the catchment for treatment. I believe it is misleading to say that Landco have an "on-site treatment train" approach when this only applies to 12% of the impervious area. In this 88% of the impervious area, Landco rely solely on a conventional, end of pipe system consisting of wetlands at the bottom of the catchment. In contrast, NSCC include rain water tanks for the roofs and bioretention/rain gardens for the roads, as well as a wetland for managing the stormwater runoff from their medium/high density areas in the lower part of the catchment.
>
> Mr Cochrane also appears to misunderstand the requirements of the Landco SP text with respect to on-site stormwater management. In Mr Cochrane's section 9.15 he states that Mr Egerton's types of at-source treatment proposed for the roads under the Landco SP will fully meet NSCC's objectives, *'... It is my view that the use of rain gardens, swales, and pervious paving proposed for various road types fully meets NSCC's objectives.'* While Mr Egerton's proposed at-source stormwater treatment options for roads will meet the NSCC's objectives, the Landco SP text does not support the use of Mr Egerton's proposals.
>
> As mentioned previously for other areas of the Landco text in Sections 3 and 4 above, Landco have carefully inserted or changed words within the NSCC SP text to downgrade the on-site stormwater requirements. In this case, with respect to the stormwater management requirements for the roads, Landco have deleted the word 'should' and inserted 'could' in Landco's SP text Section 9A.3.5, Urban Form and Design, Policies, number 15 as: *'Roads and other public services ..... The best practicable option ~~should~~ could include of the following:.....rain gardens, swales, biofiltration trenches and pervious paving .....'*. Landco specifically replace the word 'should' with 'could' so that rain gardens are not a requirement but a "maybe".

590 Dr D A Kettle, rebuttal evidence paras 4.11 to 4.14 [Environment Court document 12A].

Dr Kettle was only cross-examined on the last of those paragraphs by counsel for Landco, and even Mr Kirkpatrick was reduced to saying that Landco was '... suggesting here ... options for consideration'[591]. We therefore either have to reduce the weight given to the evidence of the Landco witnesses Mr Cochrane and Dr Keesing where they rely on a full treatment train approach being included in the Long Bay structure plan, or approach their evidence on the basis that if we accept it, then it will be on the condition that such an approach to stormwater management is adopted.

[398] Landco's structure plan places three wetlands or ponds on the north side of Vaughans Stream[592] to provide stormwater quantity and quality control. Water would have to be piped across Vaughans Stream[593] in two places to the wetlands, which Mr Shaver said[594] would be more accurately called ponds. He also considered[595] that the ponds would be difficult to build where they are shown on Mr Cochrane's plan[596], for example Landco's pond 3 is very close to Vaughans Stream[597]. A fourth primarily provides quality control for Awaruku Stream. The stormwater ponds would be designed[598]:

- to catch peak flows for up to 10-year return period rainfall events;
- to pass the 100-year return period flow; and
- to store and release the first 34.5 mm of run-off over 24 hours.

[399] Mr Cochrane's stormwater plan shows that all the stormwater from the Glenvar Slopes is collected and piped to 'wetland' 2 on the north side of Vaughans Stream. Those slopes are in the Landco structure plan's proposed Long Bay 2A(ii) Zone with heavily earthworked slopes and no on-site stormwater controls. Yet we take it those are the slopes containing tributaries 3A, 3B and 3C, 9A, 9B and 9C, and the heads of 12A and 12B and 13 which Dr Keesing was referring to when he wrote that he supported[599]:

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591 Transcript p. 376.
592 Mr P R Cochrane, evidence-in-chief Figure 3 [Environment Court document 34].
593 Mr P R Cochrane, evidence-in-chief Figure 3 [Environment Court document 34].
594 Mr E Shaver, second supplementary statement paras 2.6 and 2.6 [Environment Court document 51].
595 Mr E Shaver, second supplementary statement paras 2.11 [Environment Court document 51].
596 Mr P R Cochrane, evidence-in-chief figure 3 [Environment Court document 34].
597 Mr E Shaver, second supplementary statement para 2.11 [Environment Court document 51].
598 Mr P R Cochrane, evidence-in-chief para 5.18 [Environment Court document 34].
599 Dr V F Keesing, evidence-in-chief para 11.43 [Environment Court document 37].

> ... the legal protection and [physical] enhancement of the strands of native bush and the revegetation of ... tributaries where their riparian margins are bare. I support this approach in these mid and upper reaches of the catchment as it is here that the tributaries could perform to some degree the ecological services described in this section of my evidence.

[400] We do not need to go into the details of the NSCC structure plan on stormwater management at this stage, but can say that we generally approve the approach recommended by Dr Kettle whom we found a thoughtful and measured witness.

3.77 Conclusion on hydrological effects

[401] For the reasons given and because in the end we prefer the greater experience and expertise of Dr Kettle and Messrs Jowett and Shaver over Mr Cochrane, we find:

(1) under the Landco structure plan it is likely that (apart from some road water) all the surface flow and groundwater flow for the majority of rain events on the Glenvar Slopes will be captured by stormwater systems and piped across Vaughans Stream to proposed wetland 2;

(2) it is very likely that the Landco structure plan, even with a fuller treatment train, would result in significantly reduced groundwater and run-off contributions to low flows in the upper mid-reach and mid-reach sections of Vaughans Stream, and that the reduced base flow would be about 70% of the existing base flow;

(3) it is likely that the Landco structure plan reduction in base flow will be significantly greater, possibly in the order of 50%, than the NSCC SP's reduction (under its amended earthworks plans);

(4) that in small rainfall events there is a medium likelihood that stream flow is likely to be flashier (and thus more damaging) under the Landco structure plan than at present or under the NSCC structure plan;

(5) the stream network remaining is very likely to be reduced by 11% under the NSCC structure plan and by a minimum of 18% under the Landco structure plan;

(6) it is likely there will be three crossings (road bridge, stormwater pipe to the ponds and a higher pedestrian/cycle crossing) of Vaughans Stream under

the NSCC structure plan and four (an extra stormwater pipe from the Glenvar Slope) under the Landco structure plan.

[402] Thus while both structure plans do propose stormwater management as an integral part of their site development (thus achieving Design Principle 17.5.5(5)) we consider it very likely that the Landco structure plan will not adequately protect water quality (Design Principle 17.5.6(1)). It is very likely that the Landco structure plan will not satisfactorily implement the stormwater (tier 3) policy in the City Plan which requires maximum on-site absorption and vegetation filters. We consider there is a medium likelihood (beyond 50% probability in this case) that the modified NSCC structure plan will meet the stormwater principles and Design Principles.

3.8 Effects on freshwater habitat

3.81 Introduction

[403] Mr Schueler described[600] how the increased magnitude and frequency of stormwater flows give urban streams more power to cause channel erosion and transport sediment. His table predicting those and other changes in habitat is[601]:

Table 2 Stream Habitat Predictions According to the ICM

Stream Habitat Indicator	ICM Stream Classification			
	High Quality	**Impacted**	**Non-Supporting**	**Urban Drainage**
Ultimate Channel Enlargement Ratio	1.0 to 1.2 times larger	1.5 to 2.5 times larger	2.5 to 6 times larger	6 to 12 Times larger
Sediment Yield	Rural Background	2 to 5 times greater	5 to 10 times greater	Possibly lower
…				
Presence of Large Woody Debris	5 to 10 pieces per 30 m	2 to 3 pieces per 30 metres	Scarce	Absence
Increased Summer Stream Temperatures	0 to 2 degrees F	2 to 4 degrees F	4 to 8 degrees F	8 + degrees F
Adapted from Schueler (2004)				

600 Mr T R Schueler, evidence-in-chief para 3.5 [Environment Court document 10].

601 Mr T R Schueler, evidence-in-chief Table 2 [Environment Court document 10]. We have omitted a line detailing 'typical stream habitat scores' since he did not explain this.

The line about 'sediment yield' is particularly interesting because it confirms Landco's contention that the sediment yield for the streams on the Vaughans Slopes in particular is currently greater than it would be under either of the proposed structure plans. Because sediment issues were covered very fully in these proceedings we discuss them separately below. Otherwise we again accept Mr Schueler's predictions as raising the relevant topics, but give them no weight as to whether they will actually occur.

3.82 Channel enlargement

[404] As for impacts on the channel and the stream habitat, in Dr Hudson's opinion[602] for Landco:

> (i) Potential impacts on stream morphology and the stream habitat appear to be overstated by Mr Jowett and Dr Parkyn and are tenuous because:
>
> ... Present channels are already enlarged;
>
> ... There is a lack of recognition of the present condition of the streams;
>
> ... The affected ephemeral headwater channels are unstable and infilled with fine sediment; and
>
> ... The lower perennial stream channels have relatively stable vegetated banks, but the bed is composed of fine sediments which limit habitat quality.
>
> (ii) In the unlikely event that increased runoff causes excessive bank scour, remedial bank reshaping and riparian planting can be undertaken;
>
> (iii) If excessive sediment deposition occurs, these deposits can be excavated as is the norm for numerous waterways throughout the country.

Dr Hudson's first two points - that some channels are already enlarged and that the streams are already degraded - may be well made for some tributaries but his point about the beds being of limited habitat quality is not agreed by Dr Parkyn - she says those are the natural beds in this area and we accept her greater knowledge of the area. Finally, Dr Hudson's proposed backup remedies involve earthworking and excavation which breach the low impact design principles in the City Plan, so we give that aspect of his evidence no weight.

602 Dr H Hudson, rebuttal evidence para 2.3(d) [Environment Court document 35].

[405] Dr Hudson also criticised[603] Mr Jowett for failing to consider Mr Cochrane's calculations of increases in velocity in Vaughans and Awaruku Streams. However, what Mr Jowett actually wrote was this[604]:

> Mr Cochrane concluded[605] that post-development velocities would be below critical velocities for erosion. However, any increase in the magnitude of large floods will cause increased erosion, **regardless of** design, critical stresses or **velocities.** The reason for the increase is that the channel morphology has been formed under the pre-development flood regime and any change in the frequency and magnitude of peak discharges will cause an adjustment to channel morphology. The Landco proposal increases peak discharges by about 14% in the lower reaches of Vaughans Stream, and I estimate that the [comparatively] reduced area of impervious catchment in the NSCC plan will increase discharges above the existing situation by about 9%. Both plans will result in erosion and Vaughans Stream will widen in proportion to the square root of the respective increases in peak discharge. This means that stream widening and erosion will be less under the NSCC Plan than under Landco's proposal.
> [Footnote and emphasis added]

[406] In the light of that passage we accept Ms Campbell's submission[606] that:

> It is simply not correct that Mr Jowett did not consider the increases in velocity that Mr Cochrane modelled. While Mr Jowett has not extensively discussed those velocity findings, that is because he does not agree that that is the key determinant of changes in channel morphology.

We find that it is likely (i.e. a probability of more than 0.67) that further widening of Vaughans Stream and its tributaries will occur under the Landco structure plan.

3.83 Water temperature

[407] Both Mr Schueler and Dr Kettle predicted increases in temperatures as a result of implementing either structure plan. Based on effective impervious area and pond warming, but disregarding increased riparian cover as neutral between the structure plans, Dr Kettle estimated[607] that the NSCC structure plan would increase water

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603 Dr H Hudson, rebuttal evidence para 6.4(b) [Environment Court document 35].
604 Mr I Jowett, evidence-in-chief para 5.12 [Environment Court document 48].
605 Mr P R Cochrane, evidence-in-chief para 5.46 [Environment Court document 34].
606 ARC submissions para 5.33.
607 Dr D A Kettle, evidence-in-chief para 10.34 *et ff* [Environment Court document 12].

temperatures at various nodes (see plan "A" attached), as would the Landco structure plan, by even more. We show Dr Kettle's figures in the table[608]:

	Increase in Temperature (Celsius deg.)		
Nodes	**NSCC**	**Landco**	**Difference**
1	1.7	5.3	3.6
2	1.8	5.4	3.6
3	1.9	4.6	2.7
4	0.5	3.2	2.7
5	0.2	2.1	1.9
6	0.2	1.8	1.6
7	0.2	1.9	1.7
8	0.2	2.0	1.8
9	0.2	1.5	1.3
10	0.1	0.6	0.5
11	0.1	0.4	0.3

It should be noted that the nodes start from downstream, i.e. node 11 is furthest up the river. So there is a steady increase according to Dr Kettle as a result of the two structure plans as the water flows downstream. In every case the Landco Structure Plan is likely to cause a greater increase than the NSCC Structure Plan.

[408] For Landco Mr Cochrane wrote that water temperature increases in the stormwater retention ponds were unlikely to affect water temperatures in Vaughans Stream during times of low flows because the ponds would not be discharging; they would only discharge when diluted and cooled with floodwater. The other expert for Landco on the effects of the Landco structure plan on water temperatures was Dr Donovan, the expert called by Landco on the effects of the structure plans on the ecology of the main stem of Vaughans Stream. He wrote[609]:

608 From Dr Kettle's Annexure DK16 scaled as best we can [Environment Court document 12].
609 Dr W F Donovan, evidence-in-chief paragraphs 7.52 to 7.55 [Environment Court document 38].

> To assess the potential effects of development under the Landco SP on water temperature, I compared the temperature data in areas of Vaughans Stream with shading to those without.
>
> Recent data that we have obtained on summer temperature changes throughout Vaughans Stream (Appendix 7) have indicated that the riparian shading in the upper catchment not only maintains the stream at a lower temperature (c. 16.5°) than that of the exposed lower section (c. 20°C), but also reduces the daily variation in temperature, and the maximum temperature (c. 18.5°C - upstream; c. 26°C - downstream).
>
> In my opinion, the effects on water temperature resulting from development under the Landco SP will be no more than minor. The continuation of the existing riparian cover down the stream (riparian and conservation planting) and around the wetlands, coupled with the dilution of the treated stormwater from the wetlands by the cooler water in the stream under elevated flow conditions, will result in a minimal increase in the temperature of the water in the stream.

[409] In relation to Vaughans Stream Dr Boothroyd, for the ARC, wrote[610]:

> In his evidence, David Kettle[611] ... showed how cumulative instream temperatures changes could be [an increase of] as much as 4.5°C for the proposed Landco variation (compared to 2°C for the NSCC Variation 66). Given that the lower Vaughans Stream maximum summer temperatures (as recorded in summer 2006) reach temperatures of up to 23°C, then maximum summer stream temperatures could be as high as 28°C resulting from the proposed Landco variation Such changes are a significant increase in stream temperature and have the potential to affect the native fish and other aquatic ecological values of Vaughans Stream, especially the significant inanga spawning and adult habitat in the lower reaches of the catchment.

[410] Dr Boothroyd also predicted changes in temperature as a result of Landco's contemplated ponds (sometimes described in these proceedings as 'wetlands' but more accurately described as 'ponds'[612]):

> In their research on the effects of small ponds (in rural environments) on streams, Maxted et al. (2005) found that mean daily stream temperatures increased by 3.1-6.6°C during the critical summer period, and temperature differences were three times higher than from ponds in bush catchments (0.8 - 2.0°C).

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610 Dr I K G Boothroyd, evidence-in-chief paragraphs 7.24 and 7.25 [Environment Court document 11].

611 Dr D A Kettle, evidence-in-chief Annexure DK16 [Environment Court document 12].

612 Dr I K G Boothroyd, evidence-in-chief paragraphs 7.26 - 7.29 [Environment Court document 11].

> Elevated temperatures were observed for hundreds of metres downstream from the ponds owing to the slow rate of cooling (1°C/100 m), expanding the extent of adverse effects well beyond the "footprint" of the pond. For example, macroinvertebrate community composition appeared to be significantly affected by ponds in rural and native forest catchments.

[411] Dr Boothroyd's response to Dr Donovan's evidence (quoted earlier) on the cooling effect of revegetation was that[613]:

> Although the planting of shade-canopy riparian vegetation alongside the streams is commonly believed to assist in reducing stream temperatures, Maxted et al. (2005) concluded that shade vegetation along streams in the catchment (and along the perimeter of the ponds) was not sufficient to avoid these adverse effects below ponds. This adds further emphasis to the point I made earlier in my evidence (paragraph 5.6) that catchment-scale modifications (as predicted by the ICM model) have a greater overriding influence on stream ecosystem health and condition [than] localised mitigation.
>
> Thus, in my opinion, the planting of shade vegetation along downstream of the proposed ponds may not avoid adverse temperature effects resulting from the presence of ponds, especially given the short distance between the mainstem pond and the stream mouth.

We accept that part of Dr Donovan's rebuttal evidence[614] in which he criticises reliance on the *Maxted* study which was about the effects of an on-line dam system on water temperature whereas here we are considering off-line ponds. When attempting to rebut[615] evidence on water quantity as affecting temperature (amongst other things) Dr Donovan refers to Mr Jowett's summary[616] that:

> ... the change in flow regime is probably the most important [factor] because flow affects so many aspects of the habitat

- Dr Donovan then simply repeats[617] his reliance on Mr Cochrane's evidence and state[618] that Mr Jowett does not challenge any of Mr Cochrane's findings. That is

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613 Dr I K G Boothroyd, evidence-in-chief para 7.29 [Environment Court document 11].
614 Dr W F Donovan, rebuttal evidence para 5.2 *et ff* [Environment Court document 38A].
615 Dr W F Donovan, rebuttal evidence [Environment Court document 38A].
616 Mr I Jowett, evidence-in-chief para 2.1 [Environment Court document 48].
617 Dr W F Donovan, rebuttal evidence para 3.8 [Enviromnent Court document 38A].
618 Dr W F Donovan, rebuttal evidence para 3.9 [Environment Court document 38A].

correct, but he fails to comment on the evidence of Dr Boothroyd, and the latter did analyse Mr Cochrane's evidence carefully as we have described. We have already found that we prefer Dr Boothroyd's evidence - which is similar in its conclusions to that of Mr Jowett - to that of Mr Cochrane. So Dr Donovan's evidence should be given very little weight in this context. Since we have not preferred Mr Cochrane's evidence we must discount Dr Donovan's evidence on these issues.

[412] In any event we were generally more impressed by the evidence of Dr Kettle and Dr Boothroyd. Their evidence was more specific than that called for Landco and was not substantially damaged by cross-examination[619]. Dr Kettle's predicted increase of 4.5°C[620] in maximum summer temperature for the Landco SP is worrying especially if it is added to Dr Donovan's maximum summer temperature of 26°C, because as we discuss shortly (26° + 4.5° =) 30.5°C is well beyond the temperatures which are lethal to many invertebrates, and within the range that kills inanga.

[413] We predict that a likely outcome of the Landco structure plan will be higher temperatures (which have the potential to harm the aquatic fauna as we discuss shortly) in Vaughans Stream. We also predict that the NSCC structure plan (July 2007 version) is likely to cause slightly higher temperatures than those at present which are already undesirably high as a result of removal of riparian vegetation.

3.84 Will there be pollution by rubbish or heavy metals?

[414] We accept that if a full stormwater treatment train is introduced then contamination by, for example, heavy metals is likely to be minimal. While the Landco structure plan only proposes a limited treatment train over a small area - 12% of the total area to be urbanised - the stormwater will still be collected in the ponds which '... are likely to provide a high degree of removal of lead ... and moderate removal of copper and zinc ...'[621].

619 Neither Dr Kettle nor Dr Boothroyd was cross-examined on this issue at all.
620 Dr D A Kettle, rebuttal evidence para 11.11 [Environment Court document 12A].
621 Dr W F Donovan, evidence-in-chief para 7.28(e) [Environment Court document 38].

[415] As a relatively minor but still significant point we note that Mr Schueler predicted[622] that trash and debris would increase from less than 1 ton to 2-5 tons 'per square mile'. There was no evidence called to rebut this. Two features of the Landco structure plan and NSCC structure plan make us consider his predictions are realistic. The first is that both structure plans contemplate a road across Vaughans Stream which would in our experience be a likely source of rubbish into both the stream and the so-called wetlands. Secondly the presence of the village centre so close to the stream, ponds, and proposed wetland on the Vaughans Flats might well exacerbate the problem.

3.9 Freshwater biodiversity

3.9.1 Proportion of impervious catchment

[416] The Landco SP allows up to 29% impervious catchment[623]; and the NSCC SP between 16% and 19%[624]. The relevance of that was described by Mr Schueler as follows[625]:

> Hydrologic, physical, and water quality changes caused by urbanization stress the aquatic community and collectively diminish the quality and quantity of available habitat. As a result, these stressors generally cause a decline in biological diversity, a change in trophic structure, and a shift towards more pollution tolerant organisms (Table 4). Under current patterns of development, urban streams lose their potential to have excellent biological diversity at about 10% subwatershed IC, and *lose the potential* to achieve "fair" diversity scores at about 25% subwatershed IC. This basic pattern in aquatic insect diversity has been reinforced by more than 20 urban stream studies[626].
>
> [Italics added]

We consider Dr Schueler was choosing his words with care. What he was saying is that even if (before urban development) a stream is debased, the development entails that it loses potential for remedying and mitigating (past) adverse effects which it might have had.

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622 Mr T R Schueler, evidence-in-chief Table 3 [Environment Court document 10].

623 Mr I Jowett, evidence-in-chief para 5.4 [Environment Court document 48] and Mr P R Cochrane, rebuttal evidence para 3.12 *et ff* [Environment Court document 38].

624 Dr Kettle calculated 16%: supplementary evidence, 18 July 2007 [Environment Court document 12B].

625 Mr T R Schueler, evidence-in-chief para 8 [Environment Court document 10].

626 Referring to his Centre for Watershed Protection publication: 'Impacts of impervious cover in aquatic ecosystems'. *Watershed Protection Techniques Monograph No. 1.* [Ellicott City, Maryland, USA] 2003.

[417] His predictions were:

Table 4 Aquatic Diversity Predictions According to the ICM				
Aquatic Diversity Indicator	ICM Stream Classification			
	High Quality	**Impacted**	**Non-Supporting**	**Urban Drainage**
Aquatic Insect Diversity	Good to excellent	Fair to good	Poor	Very poor
EPT Taxa	70 to 90%	40 to 70%	20 to 50%	0 to 20%
Fish Diversity	Good to excellent	Fair to good	Poor	Very poor
Riparian Plant Diversity	Fair to good, depending on grazing	Stressed, with reduced native plant diversity	Simplified community with many exotic species	Isolated remnants; dominated by exotics
Adapted from Schueler (2004)				

Landco attacked much of the evidence summarised above as too general and therefore irrelevant. We turn to consider the effects of the proposed structure plans on the contentious streams as, predicted by the experts.

3.9.2 Zero-order and First-order streams

[418] In the Vaughans Stream catchment Landco's structure Plan shows that it is proposing to fill in streams 0, 1A, 1AA, 1B and 1D, 2, 2A, most of 2B, 9A, 9B and 9C and the NSCC SP proposes to fill in stream 0 and a part of stream 2.

[419] The loss of zero-order streams resulting from urbanisation was predicted by Dr Boothroyd to have the following effects on freshwater ecosystem function and stream ecological values[627]:

- loss of groundwater recharge and discharge;
- reduction of important nutrient storage and transformation functions;
- loss of storage and retention or eroded hill-slope sediments;

627 Dr I K G Boothroyd, evidence-in-chief para 5.3 [Environment Court document 11].

- loss of delivery of leaf inputs and large woody debris to downstream habitats;
- influence on downstream water quality of the stream network, and
- loss of hydrologic connectivity of down stream channels.

[420] This was confirmed by Dr Parkyn who explained the importance of headwater areas for downstream receiving waters[628]:

> Channelisation, piping, damming, and burial of headwater streams unavoidably impacts streams by altering runoff patterns, altering fluxes of matter, energy, and organisms to downstream reaches, and by removing distinctive habitat. Typically, urbanisation and piping of streams results in damaging effects downstream, such as elevated streamflow, nutrients, pesticides, faecal coliforms, and other contaminants that are associated with roads, pavements, houses, compacted soils, domestic animal waste, and sewer leaks[629].

[421] She elaborated on that as follows[630]:

> Urban stormwater often contains elevated concentrations of nitrogen and phosphorus[631], which can cause nuisance growth of rooted plants and algae in downstream rivers, lakes, and estuaries. Channelisation, piping or installing tile drains in headwater streams bypasses the biologically mediated nutrient processing function, i.e. it removes the natural "cleansing" process and increases loading to downstream waters where biotic processing is less effective due to greater water depth and velocity that reduces the contact between water and streambed where biotic processing is most active. Headwater wetlands can be particularly effective at nitrogen removal through the process of denitrification[632] in organic soils and stream substrates. Piping and tile

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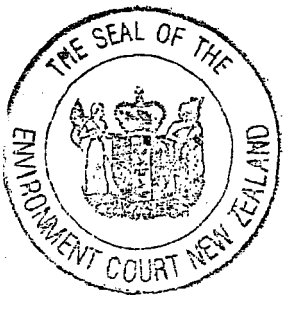
628 Dr S M Parkyn, evidence-in-chief para 3.3 *et ff* [Environment Court document 49].

629 Referring to:
(1) Freeman M C, Pringle C M, Jackson C R 2007. 'Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at region scales'. *Journal of the American Water Resources Association* 43: 5-14.
(2) Paul M J, Meyer J L 2001. 'Streams in the urban landscape'. *Annual Review of Ecology and Systematics 32: 333-365.*

630 Dr S M Parkyn, evidence-in-chief para 3.7 [Environment Court document 49].

631 Suren A M 2000. 'Effects of urbanization'. In: Collier, K J, Winterbourn M J eds. *New Zealand stream invertebrates: ecology and implications for management.* (New Zealand Limnological Society, Christchurch) 260-288.
Meyer J L, Paul M J, Taulbee W K 2005. 'Stream ecosystem function in urbanising landscapes'. *Journal of the North American Benthological Society* 24: 602-612.

632 She later refers to Sukias J and Nagels J 2006. 'Small headwater streams of the Auckland Region Volume 3: Nitrate & Phosphate Removal'. *Auckland Regional Council Technical Publication No. 311, 2006.*



draining directs water away from these contact zones[633]. Similarly, plants growing within the streams can take up nutrients and reduce the concentrations of bioavailable nutrients downstream, but if contact is removed by piping, or flows are increased, there is less opportunity for uptake to occur.

[422] While Dr Keesing predicted the effects of three scenarios for the tributaries of Vaughans Stream:

(1) continuing existing pastoral use;
(2) Landco SP;
(3) NSCC SP

- Dr Parkyn for the ARC suggested the effects of a further scenario in her evidence-in-chief

(4) restoration of riparian forest.

[423] Dr Keesing wrote[634]:

> ... [Mr Cochrane's] evidence is that the [non-permanent] tributaries within the Vaughan's Stream lower reaches do not contribute in more than a minor way to the functioning of the main stem in terms of water quantity, due principally to the small sub-catchment size of each of the tributaries (both each individually and in total) and the short-term duration of the water inputs (ie. the streams are ephemeral).
>
> Further to this, the affected tributaries would be actively degrading the water quality of the main stem, due to the following factors:
>
> (i) the lack of cover in the tributaries, leading to lowered oxygen and increased water temperature issues; and
> (ii) the surrounding land use (being a cattle farm) leading to nutrient enrichment and sediment inputs.

633 Referring to: Triska F J, Duff J H, Shiebley R W, Jackman A P, Avanzino R J 2007. 'DIN retention-transport through four hydrologically connected zones in a headwater catchment of the upper Mississippi River'. *Journal of the American Water Resources Association 43: 60-71.*

634 Dr V F Keesing, evidence-in-chief paragraphs 11.37 and 11.38 [Environment Court document 37].

[424] When Dr Parkyn's scenario was criticised by Dr Keesing in his rebuttal evidence as too expensive, as taking too long, and as not achieving better outcomes than the Landco structure plan proposal, Dr Parkyn responded in her supplementary brief first by stating[635] that "the quality of urban streams was significantly poorer than those in rural and forest land cover in the Auckland Region" - relying on a very recent publication "River Water Quality - state and trends in Auckland Region"[636]. Secondly Dr Parkyn asserted that[637] "the key factor is that the potential for improvement, with implementation of riparian management and careful land management, is high". She did not agree[638] with Dr Keesing's statement under cross-examination[639] that the benefits of fencing and riparian planting and/or regeneration (as demonstrated by improved biodiversity) would take a long amount of time to show in the Vaughans Stream catchment. To support her assertion she referred to a recent study in the Waikato: "Integrated watershed management improves economic and environmental performance of a New Zealand hill-country, pastoral farm"[640].

[425] Counsel for Landco were critical of the ambushing 'last minute' reference to that study in their closing submissions. We do not consider that is a fair criticism for two reasons. First, the Waikato paper is recent so could not have been available for long and she acted properly in giving the Court the best and most up-to-date evidence as she saw it; secondly - and this goes to the issue of fairness - Dr Parkyn may have been surprised herself with Dr Keesing's answers in cross-examination, since the thrust of the Long Bay case relies heavily on revegetation of the main stem of Vaughans Stream - see for example Mr D Slaven's evidence[641] or the evidence[642] of Dr Donovan, already quoted, on the hoped-for cooling effect from revegetation of the main stem. There is no suggestion in Dr Slaven or Dr Donovan's evidence that the revegetation will not be effective quickly. Dr Parkyn concluded[643]:

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635 Dr S M Parkyn, supplementary statement para 2.4 [Environment Court document 49A].
636 M Scarsbrook (ARC Technical Publication No. 336) 2007.
637 Dr S M Parkyn, supplementary evidence para 2.5 [Environment Court document 49A].
638 Dr S M Parkyn, supplementary statement para 2.6 [Environment Court document 49A].
639 Transcript p. 1187.
640 J M Quinn et al, NIWA 2006.
641 Environment Court document 39.
642 Dr W F Donovan [Environment Court documents 38 and 38A].
643 Dr S M Parkyn, supplementary statement paragraphs 2.12 to 2.14 [Environment Court document 49A].

> I believe that the Long Bay streams would respond to stock-exclusion and riparian protection in a similar way to the [Waikato] streams. Most importantly, the small streams would be quickly shaded, even by long grasses before planted vegetation had a chance to grow to sufficient size. This is particularly important because cooler water temperature is a key component to the recovery of biotic diversity and the health of streams.
>
> The quality of the streams in the upper Long Bay catchment with native riparian vegetation suggests that there will be nearby source areas of recolonising biota. With revegetation along all of the streams there would be corridors for the adult insects to move through, thereby facilitating recolonisation of rehabilitated streams.
>
> Many Auckland streams are naturally soft-bottomed (silty) and overhanging vegetation along banks and wood inputs from canopy cover are important habitat components. We would not need to wait for the sediments to "wash out" as Dr Keesing suggests, as the natural condition of many forested and healthy Auckland streams are soft-bottomed rather than gravel-bottomed.

We accept Dr Parkyn's evidence as establishing that there is a realistic fourth freshwater scenario for these streams (in addition to Dr Keesing's three given earlier in this section).

Streams 1A, 1C and 1D

[426] Dr Keesing's approach was that because the streams 1A, 1C and 1D had low ecological values now it would not matter if they were further modified under the Landco proposal especially in the light of Landco's proposal to protect stream 1C in the wedge-shaped reserve.

[427] While we accept that streams 1A, 1AA, 1C and 1D degrade the water quality of the main stem of Vaughans Stream at present, not all landowners will treat the land as poorly as Landco does. It is possible for us to imagine more enlightened and responsible landowners fencing off the streams (and the seeps at their head) and planting riparian strips, thus improving the water quality over time. By contrast the impervious surfaces associated with Landco's proposals for Vaughans Slopes (North) might never allow much improvement on present water quality.

Stream 2

[428] The NSCC structure plan proposes to fill less of the first-order part of stream 2 than Landco because roughly 50% of the stream (ignoring the second-order drain section on Vaughans Flats which we think is to be rehabilitated) is within the NSCC's LB 7 (Heritage Protection) Zone.

Stream 3

[429] Part of streams 3A and 3B are partly piped (either side of Long Bay Primary School) and that is to continue.

Streams 9A to 9C

[430] The Landco structure plan does not fill in the last 100 metres of stream 9A. We are uncertain as to the fate of the native bush along the sides of that stretch under the Landco structure plan. Streams 9B and 9C (and most of 9A) are filled in under the Landco structure plan. Under the amended North Shore City earthworks plan[644] streams 9A and 9B are not worked and 9C is almost free of earthworks.

3.9.3 Second order streams

Stream 1B

[431] In relation to stream 1B on the Vaughans slopes Dr Keesing's evidence was that the Landco structure plan protected this stream by realigning it and then planting its new riparian strips; further, its current character under the pastoral farming regime is equivalent to an impervious cover of 40%; finally its influence on the freshwater ecology of the stream is negligible since it drains to the lower reaches of Vaughans Stream which are subject to tidal influence.

Stream 2

[432] Dr Boothroyd was of the opinion that the inanga spawning habitat present within the lower part of tributary 2 - where it is a ditch running across the Vaughans Flats was 'of note'. This stream will be lost under the Landco SP proposa1[645]. Under the NSCC

644 Dr D A Kettle, Figure DK-R4 [Environment Court document 12].
645 Dr V F Keesing, evidence-in-chief para 15.23 [Environment Court document 37].

SP it is proposed to be rehabilitated as we understood their plans, although Dr Kettle shows some subject to filling[646].

Stream 3

[433] Stream 3 is carefully avoided under the NSCC structure plan where the Glenvar (Valley) Road extension crosses but it is likely to be impacted[647] by the Landco earthworks.

Main Stem Vaughans Stream from Stream 11 down to 2B

[434] We have recorded the agreement of the experts[648] that under the Landco SP this reach is likely to be dewatered of base-rate flows by up to 30% and by 17% under the NSCC SP. Mr Cochrane called the differences between these flows 'indiscernible'[649]. While he may be correct when the flow is seen through human eyes, we doubt if that is correct ecologically. The proper comparison in any event is with the current base flow.

[435] Dr Donovan considered water quantity under three headings: peak flows, stream velocities, and summer flows. Expressly on the basis of Mr Cochrane's evidence he concluded:

(a) that small increases in peak flows[650] will not have a significant adverse effect on the ecology of Vaughans Stream;

(b) that[651] "[a]s development under the Landco SP will not significantly alter existing stream velocities, I consider that there will not be a significant adverse effect on the ecology of Vaughans Stream or the Awaruku Stream";

(c) and in relation to summer low flows[652]:

646 Dr D A Kettle, Figure DK-R4 [Environment Court document 12].
647 Dr D A Kettle, Figure DK-R5 [Environment Court document 12A].
648 E.g. Mr P R Cochrane, evidence-in-chief para 4.60 [Environment Court document 34].
649 Mr P R Cochrane, evidence-in-chief para 4.66 [Environment Court document 34].
650 Dr W F Donovan, evidence-in-chief para 7.7 [Environment Court document 38].
651 Dr W F Donovan, evidence-in-chief para 7.10 [Environment Court document 38].
652 Dr W F Donovan, evidence-in-chief para 7.13 [Environment Court document 38].

> ... that reductions in groundwater input, if offset by reduced evaporation associated with riparian plantings, will not have a significant adverse effect on the ecology of Vaughans Stream or the Awaruku Stream.

In relation to (a) and (b), since Dr Donovan relied on Mr Cochrane's hydrological evidence - and we have already doubted the robustness of that - we put less weight on these aspects of Dr Donovan's evidence. We would have needed considerably more evidence on the reduction in evaporation from riparian plantings before we could find it likely that the volume of evaporation prevented was close to the volume of water lost.

[436] Nor did Dr Donovan elaborate on what might constitute a significant adverse effect in this context or deal with the potential effects on water temperature of a reduction in base flow[653] or run-off caused by catching all the rain that falls on the Glenvar Slopes, collecting it in a drain and piping it across the river.

[437] For the ARC Mr Shaver was concerned[654] with two other relevant matters. First he was concerned about effects from Landco's wetland 3 being in the floodplain of Vaughans Stream; secondly, about the reinforcing effect of discharges from the wetlands or ponds during floods increasing the 'risk of flooding and streambank erosion in a portion of Vaughans Stream that has been accepted by the freshwater ecologists as providing significant inanga spawning habitat"[655]. Landco's answer[656] to this was that it is a design issue. On the other hand it is one of several potential impacts on the inanga breeding habitat - proximity of village centre, loss of 30% of base flow, loss of estuarine habitat when wetland 3 is built - which concern us about the cumulative impacts of the Landco SP on inanga and their breeding. We are not fully satisfied about the impact of the NSCC structure plan either.

[438] For the ARC Dr Boothroyd introduced his discussion of the subject of the effects of raised water temperatures by writing[657]:

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653 Dr W F Donovan, evidence-in-chief paragraphs 7.52 - 7.57 [Environment Court document 38]

654 Mr H E Shaver, second supplementary statement para 2.10 *et ff* Environment Court document 51B].

655 Mr H E Shaver, second supplementary statement para 2.5 *et ff* [Environment Court document 51B].

656 Transcript 10 October 2007 p. 68.

657 Dr I K G Boothroyd, evidence-in-chief paragraphs 7.15 - 7.23 [Environment Court document 11].

> Elevated temperatures have the potential to affect the aquatic biota. Temperature is one of the primary factors influencing growth, metabolism, behaviour, reproduction and survivorship of animals and plants. Some invertebrates and some fish are extremely sensitive to temperature and will select those temperatures where physiological functions operate most efficiently. Two aspects of elevated temperature are important:
>
> - Maximum temperature
> - Change in temperature from ambient (or natural) temperature.
>
> In New Zealand, temperature has been implicated as a major force controlling life-history patterns. For example, stoneflies are absent from many New Zealand rivers where summer temperatures exceed around 20°C.
>
> Eels generally have a greater temperature tolerance than other native fish with an upper lethal range up to 38% (optimal range 25.6 - 28.5°C for shortfin elvers and 22.6 - 26.2°C for longfin elvers).

[439] Applying that to Vaughans Stream he continued:

> As outlined earlier in my evidence, there is a significant inanga fishery in the lower Vaughans Stream. Upper lethal temperatures for inanga are in the range of 30.5°C to 35.4°C with a preferred range 17.2°C to 20°C (includes all life stages).,
>
> Temperatures that are lethal to different invertebrate species range from 24.5°C - 34°C (48 hr exposure), and 22.6°C - 32.6°C (96 hr). The most sensitive species are generally mayflies and stoneflies. Quinn et al. (1994) reported 96 hlT_{50}'s of 22.6 - 25.7°C for several invertebrate species (Ephemeroptera, Plecoptera, Trichoptera and Crustacea).

We accept that evidence.

3.9.4 Effects of lower flows

[440] Mr Jowett, a scientist with qualifications in engineering, was called by the ARC to give evidence on the effects of urbanisation on streams. He explained how lower dry-weather flows, in combination with other common urban-induced effects, typically

cause a degradation of stream habitat and loss of aquatic community diversity. More particularly he stated that[658]:

> Studies of the effects of urbanisation on invertebrate communities in New Zealand show a shift to communities dominated by organisms, that can tolerate extremes of both low base flows that are potentially associated with high water temperatures, low dissolved oxygen, and excessive algal or macrophyte growth, and high flood flows that are associated with erosion, scouring, high velocities and reductions in instream habitat and shelter [Suren 2000]. Although changes to biological communities in urban streams usually result from a number of physical, chemical, and biological factors, **the change in flow regimes is probably the most important because flow affects so many aspects of habitat.**
> [Emphasis added]

[441] Mr Jowett included[659] the Vaughans upper mid-reach and mid-reaches in an area which he mapped as requiring special consideration for the protection of native fish habitat. He concluded that:

> ...[although] the Landco proposal to divert stormwater from the Glenvar area to a wetland further downstream will protect the low gradient section of stream (points 1 - 7 in Figure 7) from erosion, it will reduce base flows by up to one third. This would have a significant effect on the quality and amount of habitat for adult inanga and bullies.

We found Mr Jowett's evidence to be well researched, comprehensive and persuasive despite the fact that he was last on site around 1999[660].

[442] Dr Parkyn also gave evidence about the ecological effects of reduced base flows. She endorsed Mr Jowett's evidence that urbanisation typically involves the interruption of hydrological connectivity through extensive earthworks, the creation of impervious surfaces and piped stormwater systems[661]. Dr Parkyn emphasised the importance of "....[retaining] near-natural frequency of surface runoff so that groundwater recharge and maintenance of stream base flows can occur" and she supported the view:

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658 Mr I Jowett, evidence-in-chief para 2.1 [Environment Court document 48].
659 Mr I Jowett, evidence-in-chief Figure 7 [Environment Court document 48].
660 Transcript page 11 10 October 2007.
661 Dr S M Parkyn, evidence-in-chief para 2.2 [Environment Court document 49].

> *... that recharging sub-surface flows and maintaining near-normal flows to the Vaughan Stream from its tributaries is a critical objective ... and that piping of streams to a point lower in the catchment could put the mid section of Vaughans stream and tributary streams at risk of unnaturally low flows* [662].

We are persuaded by the evidence that maintenance of base flows is very important to managing the Vaughans Stream's natural fresh water resources on a sustainable basis. We predict that it is very likely that the reductions of base flow in the stream's upper mid and mid-reaches, which we have found would result from the Landco SP, would reduce water quantity and would have a significant adverse effect on the stream's freshwater ecology. We further predict that the amended NSCC SP by virtue of its probable reduced impact on base flows is likely to have a lesser effect in this subject area.

3.10 Proposed mitigation and enhancement - Revegetation and new wetlands

[443] Both structure plans propose revegetation of the margins of Vaughans Stream as it runs across the Flats. They also propose the creation of wetlands in and around the permanent (off-line) stormwater management ponds. The normal practice appears to be contemplated - that the major sediment retention 'devices' will be built (before earthworks) in the locations where the stormwater ponds will ultimately be. In respect of the Landco structure plan, its freshwater ecologist Dr Keesing relied[663] on those 'wetlands' (as he described them) having 'features' which would provide inanga spawning areas. Dr Donovan stated[664] "wetland enhancements along Vaughans Stream and Awaruku Streams will increase the overall amount of aquatic habit as well as providing water quality benefits". He said he understood from Mr Cochrane's Annex 4 that "... the detailed design of the ponds will include measures, such as low profile weirs, to enable species that are poor climbers (eg inanga) to enter these wetlands". Mr Cochrane actually wrote in his Annex 4 of broad crested weirs, with no reference to the height of their profile. We have difficulties with those suggestions by Landco's witnesses. We have found on Mr Shaver's and Dr Boothroyd's evidence these so-called wetlands are in fact "off-line" ponds, with an average depth of at least 0.3 metres

661 Dr S M Parkyn, evidence-in-chief para 2.13 [Environment Court document 49].
663 Dr V Keesing, evidence-in-chief para 13.2 [Environment Court document. 37].
664 Dr W F Donovan, evidence-in-chief paragraphs 8.6 - 8.9 [Environment Court document 38].

and possibly considerably more. In any event they do not continuously (or even often) discharge into Vaughans Stream. We infer that they may not be of any use unless flowing at the particular times inanga come upstream from the sea. Further, the ponds may be significantly warmer than the water in the stream. We accept that all those points are matters of detail which might be fixed on final design. Of much more concern is our understanding of inanga breeding requirements from Dr Boothroyd's evidence that they prefer the mix of salt and freshwater at the Springs high tide line in an estuarine wetland rather than in a deeper freshwater pond. There was insufficient evidence to satisfy us that it is likely that the wetlands or the re-aligned streams 1C and 1B (which would be possibly 200 metres upstream of where it currently joins the main stem of Vaughans Stream) could be designed so as to make them part of a functioning estuary.

[444] Landco's terrestrial ecologist Dr Slaven wrote[665] that revegetation would be undertaken in accordance with an integrated "Vegetation Enhancement and Restoration Guide". The guide is at Dr Slaven's Annex 1 and its objectives[666] include:

- Establish new indigenous wetland habitats within the lower reaches of both Vaughan's Stream and Awaruku Stream (including integration with stormwater treatment ponds/wetlands to be installed as part of the urban development), with associated reciprocal benefits for habitat diversity and water quality.

- ... Native wetlands would be created within the floodplain area of both streams, and integrated with the stormwater management devices (ponds/wetlands) installed as part of the urban development.

Mr Slaven later gave a more detailed description of the proposed wetland re-vegetation planting in Figures[667] in his second 'Annexure One'. They show envisaged vegetation enhancement around the stormwater devices in graphic form. The footprint shown in Figure 2/3 (Awaruku) generally matches what is shown on Landco Structure Plan Map: Land Use Strategy but is different from Mr P R Cochrane's Figure 3. The latter has a

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665 Dr D Slaven, evidence-in-chief para 2.18 [Environment Court document 39].
666 Dr D Slaven, evidence-in-chief Annex 1, pp 3 *et ff* [Environment Court document 39].
667 Dr D Slaven, evidence-in-chief Second Annex 1 Figures 2/3 and 3/3 [Environment Court document 39].

single "device" while the former both have two ponds/wetlands bisected by the proposed Beach Road extension. Dr Slaven's Figure 3/3 (Vaughans Stream) also has a different footprint from Mr Cochrane's Figure 3 and although close to the Structure Plan Map the footprints are different. It is difficult, if not impossible, to ascertain from Figure 3/3 where bunds are proposed: we suspect a degree of artistic licence has been exercised.

[445] For the NSCC Mr Shaver estimated[668] that Landco's Wetland 2 and 3 bund heights will be 2 m and 1.5 m respectively. He said both structures are too deep to be correctly characterised as wetlands, which draws Mr Slaven's graphic depictions into question. We do not know whether Mr Shaver's bund height estimates are compatible with the "broad crested weir" allowed for by Mr Cochrane and described by Dr Donovan as suitable for fish passage because the issue was not discussed by the witnesses. We recognise Mr Shaver's tentative agreement in cross-examination that through the detailed design process it may be possible to lower the height of the Landco structure plan's stormwater management pond 3 by reducing the "live" volume requirement and excavating its bed to a greater depth than 0.5 metres. Whether those measures are compatible with better inanga breeding habitat was not explained to us.

[446] The NSCC structure plan shows that the stormwater management ponds are proposed to be vested as reserves. If the NSCC seeks that, we have no difficulty with the concept. The important issues are first that they are appropriately designed (under an approved wetland, landscape and revegetation concept), secondly that they are provided and thirdly that a secure mechanism is provided for ensuring they are accessible for maintenance and properly maintained.

[447] Both Dr Keesing and Dr Donovan rely on maintenance and enhancement of existing riparian margins along Vaughans Stream and some tributaries. They also assume public reserves will be created. We have some doubts about both matters. First on Dr Keesing's evidence[669] that the benefits of regeneration in catchment 1 may take a long time to occur, we infer those benefits include the cooling effect. We do not see

668 Mr H E Shaver, second supplementary statement [Environment Court document 51B].
669 Transcript p. 1187.

how Dr Keesing can claim a benefit in the main stem that he denies to the streams in catchment 1. Secondly Landco and its witnesses appear to assume that the NSCC can be forced to accept reserves it does not want. We doubt if that is the case.

[448] We predict that it is likely that neither the fish nor the habitat values of the Vaughans Stream catchment will be protected[670] by the Landco structure plan and there is a medium likelihood that the NSCC structure plan even as amended will not do so either.

3.11 Erosion: sediment production, transport and deposition

3.11.1 Introduction

[449] The relevant experts (Dr M Green, Mr Shaver, Mr P Hartley, Dr R White, Mr G Ridley, Mr M Williams and Dr M F Larcombe) were agreed, with the exception of Dr White, that the ARC's Technical Publication 90 ("TP90") should be followed as an appropriate sediment management guide provided its requirements were supplemented by chemical treatment using flocculents, decanting earth bunds and early construction of long term stormwater ponds.

[450] A number of predictions need to be made about sedimentation rates in the structure plan area:

(1) How much sediment is produced from the structure plans' catchments under different rainfall and storm events at present?

(2) How much would be produced under a different more responsive pastoral/riparian management regime?

(3) How much would be produced (ultimately) under a developed structure plan?

(4) How much sediment might be produced during the earthworks phase -

  (a) during small rainfall events (i.e. on average)?

  (b) during different ARI storms (e.g. five year ARI, 25 year ARI)?

(5) What happens to the sediment when it meets the sea?

670 Design Principle 17.5.6(1).

We read helpful evidence about different aspects of the sedimentation issue by experts concentrating on specific issues within their expertise. We will introduce and discuss that evidence at the relevant points in what follows. Questions (4) and (5) will be answered, as far as we can on the evidence, in the next section of this decision.

[451] First, we should comment here on the wide-ranging evidence about sedimentation we read from Dr M F Larcombe and from Dr White. Dr Larcombe gave careful evidence which Mr Galbraith for Landco urged us to accept. Some of it we do. However, Mr Galbraith also urged that we should accept Dr Larcombe's 30 plus years of experience (implicitly on sediment issues) over Dr White's lack of experience in that area. That submission arises because Dr White is not an engineer but a physicist. He worked on *(inter alia)* nuclear physics principally at Auckland University and is now retired. He acknowledged that he is not an expert on sedimentation issues. We do not think the distinction between the credibility and usefulness of the two witnesses is as clear-cut as Mr Galbraith suggested, for these reasons:

(1) while Dr Larcombe has been working on sedimentation issues[671] since 1996, his qualifications are not as an engineer or physicist. His PhD is in zoology and he describes himself as a 'natural environment scientist'[672];

(2) estimation of sediment generation and transport is largely a physical rather than a biological or chemical issue, and in fact Dr White is a physicist;

(3) Dr Larcombe appears to move out of his expertise when he discusses what happens to the sediment when it reaches the sea (i.e. the receiving environment). Indeed on those issues we have specific evidence from acknowledged experts;

(4) in any event it is the essence of science that it depend as little as possible on the personalities and experience of the scientists, and as much as possible on the collection and interpretation of data; the transparency and coherency of the reasoning applied to the data; and the calculation of standard deviations and then credibility limits (roughly 'margins of error') to any predictions made.

671 Dr M F Larcombe, evidence-in-chief para 3.5 [Environment Court document 33].
672 Dr M F Larcombe, evidence-in-chief para 1.1 [Environment Court document 33].

3.11.2 Production and transport of sediment

[452] The Long Bay SP area is 360 hectares. However the total catchment area draining into Long Bay is[673]:

Awaruku Stream	282 hectares
Vaughans Stream	351 hectares
Total	633 hectares

However, a large area (208 hectares[674]) of the Awaruku catchment is residential, so the total 'pastoral'[675] area of the Long Bay catchment is (633 - 208) = 425 hectares[676].

[453] As we have stated, the sediment yields for pastoral and urban uses are different. In fact they are different both on average and during storms. The existing average annual sediment discharge from the Long Bay catchment is[677]:

Existing sediment discharge from catchment (tonnes):

425 hectare pastoral area at 0.67 tonnes per hectare	=	285
208 hectare urban area at 0.30 tonnes per hectare	=	62
Total annual average from existing catchment	=	347

[454] We can then work out how much the two structure plans would increase sediment discharge volumes while earthworking was carried on[678]:

(a) Annual average sediment discharge production with Landco SP average of 30 hectares of earthworks exposed through the earthworks season (tonnes):

Total annual average from existing	=	347
+ Discharge from earthworks at 1.6. tonnes per hectare	=	48
- Reduction[679] for existing discharge from 30 hectares	=	20
Total discharge with 30 hectares of earthworks	=	375

Increase over existing = 375 - 347 = 28 tonnes = 8.1%

673 Dr M F Larcombe, evidence-in-chief para 5.9 [Environment Court document 33].
674 Dr M F Larcombe, evidence-in-chief para 5.9 [Environment Court document 33].
675 The bush areas are counted as 'pastoral' by Dr Larcombe.
676 We exclude, because the experts did, the relatively minor Grannie's and Pohutukawa Bays' catchments.
677 Dr M F Larcombe, evidence-in-chief para 5.10 [Environment Court document 33].
678 Dr M F Larcombe, evidence-in-chief para 5.11 [Environment Court document 33].
679 Dr M F Larcombe, evidence-in-chief paragraphs 3.2 and 3.3 [Environment Court document 33].

(b) Annual average sediment discharge with NSCC SP average of 14.6 hectares of earthworks exposed throughout the earthworks season (tonnes):

Discharge from earthworks at 1.6 tonnes per hectares	=	23.4
Reduction for existing discharge from 14.6 hectares	=	9.8
Total discharge with 14.6 hectares of earthworks	=	361

Increase over existing = 13.6 tonnes = 3.9%

[455] The longer term consequences of urbanisation for reducing sediment yield were not discussed in any detail at the hearing. It is interesting to examine the figures given by Dr Larcombe. He states[680] that the bulk earthworks proposed by the Landco structure plan would be carried out over an area of 180 hectares[681] and the NSCC structure plan figure is 102 hectares. We take the Landco structure plan as potentially having a greater impact. If we assume that when all development is complete that the 'urban' sediment yield applies (i.e. 0.3 tonnes per hectare) then the total yield for the Long Bay catchment is predicted to be:

Existing residential Awaruku catchment	208 ha x 0.30	=	62
New urban	180 x 0.30	=	54
Balance pastoral land = 633 - (208 + 180) = 145 x 0.67		=	97
	Total		213 tonnes

That compares with the existing sediment discharge of 347 tonnes (showing there is to be a 40% reduction in sediment discharge on an annual average basis). Similar calculations could be done for storm events. We conclude that, provided the higher risk is managed effectively during the earthworking period, the ultimate outcome of the structure plans (especially the Landco structure plan) is likely to be strongly positive in terms of reducing sediment yield.

680 Dr M F Larcombe, evidence-in-chief para 3.2 [Environment Court document 33].
681 The equivalent figure for the NSCC is 56 hectares.

[456] Dr Larcombe produced a table[682] showing his calculations of the base sediment discharges:

Table 5.2 Estimates of sediment discharge to the receiving environment from the Long Bay catchment ...

Rain event	Sediment from 425 hectare pasture area[683]		Sediment from 208 hectare residential area[684]		Sediment from total catchment[685]
	Kg/ha	Tonnes	Kg/ha	Tonnes	Tonnes
Annual average	670	285	300	62	347
1 year ARI[686]	250	106	110	22	128
5 year ARI intense [storm]	970	414	426	88	502
25 year ARI intense [storm]	2340	996	1030	214	1210

As we stated earlier, that table suggests that urban uses of the structure plan area other things being equal (which of course they are not) would minimise sediment production. On the other hand, the experts on erosion and sediment control agreed[687]:

> ... that a greater area of earthworks over the same period increases risk and the greater the length of time for the earthworks to be undertaken the greater the risk.

We think they are talking about probability rather than risk at this point. We predict that there is definitely a larger short-term probability of sediment being transported out into the marine reserve while earthworks are open.

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682 Dr M F Larcombe, evidence-in-chief para 3.2 [Environment Court document 33].

683 425 hectares = the total pastoral area in the Long Bay catchment.

684 208 hectares = the residential portion of the Awaruku catchment.

685 633 hectares = total Long Bay catchment.

686 'ARI' means "Annual Return Interval". An ARI of one year is the event which has a 1% probability of occurring in one year. For readers familiar with annual exceedance probabilities the relationship is: AEP = 1 - exp ($^{-1}$/ARI).

687 Experts' joint statement (19 December 2006) "Erosion and Sediment Control" [Environment Court document 6/4].

3.11.3 Sedimentation control during the earthworking phase

[457] Of course there may be little benefit in reducing sediment by converting the land to urban use if it is very likely there is going to be a catastrophic increase in sediment in the meantime. That is a potential problem because, as we have stated, under the Landco SP large volume earthworks would be carried out over an area of 180 hectares[688]. The corresponding NSCC SP area of earthworks is 102 hectares[689]. The probability, intensity, frequency and consequential effects of such discharges we will now attempt to predict.

[458] The primary device for the treatment of stormwater from the earthworks is the sediment retention pond[690]. It relies on gravity to reduce the solids suspended in stormwater by assisting them to settle on the bottom of the pond before the top layer of the pond is discharged. Dr Larcombe described the essential elements of retention pond design as being[691]:

(a) A larger volume is beneficial because the retention time is increased, thereby providing more time for settlement.

(b) A permanent water (dead) storage of 30% of the pond volume and temporary (live) storage of 70% which fills and empties as a result of storm inflows, is the optimum design for sediment removal for the range of storms that occur in the Auckland area.

(c) A floating decant discharge system that discharges water from the surface of the pond (where the suspended solids concentration is lowest) operates over the live storage range.

(d) A discharge rate of 3 litres per second per hectare of catchment draining to the pond. This discharge rate maximises the retention time and sediment removal for the range of storms that occur in the Auckland area.

(e) A forebay pond provides for removal of bed load and easily settled solids and reduces the volume of sediment deposited in the pond.

(f) A wide 'level spreader' is used at the inlet of the pond to reduce the energy of the inflow and thereby minimise turbulence in the pond which is particularly important during high stormwater flow periods.

(g) The sediment retention pond also provides an important flow attenuation function for most storms, although when the live storage volume is full and the pond is overflowing the primary spillway there is very little flow attenuation

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688 Dr M F Larcombe, evidence-in-chief Table 5.2 [Environment Court document 33].
689 Dr M F Larcombe, evidence-in-chief paragraphs 3.2 and 3.3 [Environment Court document 33].
690 Dr M F Larcombe, evidence-in-chief para 4.2 [Environment Court document 33].
691 Dr M F Larcombe, evidence-in-chief para 4.5 [Environment Court document 33].

[459] We understand that most earthworks consents issued by the ARC[692] now require chemical treatment of earthworks stormwater - by flocculants to bind particles together. The chemical that is most often used in the Auckland area to improve the removal of suspended sediment from earthworks stormwater is the coagulant polyaluminium chloride or PAC. PAC works by neutralising the electric charges on small soil particles and promoting the formation of aggregates of higher density which settle at a much greater rate than the individual charged particles.

[460] Dr Larcombe then presented[693] a summary of his 'estimated sediment discharges and sediment removal efficiencies for sediment retention ponds of different sizes, both with and without chemical treatment'. He concluded[694]:

> The data presented in Table 4.1 [*see below*] is important because it shows that substantial treatment performance gains can be made both by increasing the size of the retention pond, and by including chemical treatment. The improvement in treatment. performance achieved by moving from a 2% pond without chemical treatment, to a 3% pond with chemical treatment, is a reduction in sediment discharge from 9.2 tonnes per hectare to 1.0 tonne per hectare, per earthworks season.

Table 4:1 Estimated average earthworks season sediment removal performance for earthworks stormwater sediment retention ponds, with and without chemical treatment (Auckland North Shore clay soils).

Performance measure	Treatment	Retention pond size[695]		
		1.5%	2.0%	3.0%
Sediment discharged to receiving environment (tonnes per hectare)	Without chemical treatment	12.0	9.2	5.8
	With chemical treatment	2.8	2.1	1.0
Sediment removal efficiency in pond (%)	Without chemical treatment	60	69	81
	With chemical treatment	90	93	97

692 Dr Larcombe referred to the ARC Technical Publication 227 'The use of flocculants and coagulants to aid the settlement of suspended sediment in earthworks runoff: Trials, methodology and design' (ARC 2004a (Draft)), and the Technical Publication 'TP90 Flocculation Guidelines' (ARC 2003 (Draft)).

693 Dr M F Larcombe, evidence-in-chief para 4.8 [Environment Court document 33].

694 Dr M F Larcombe, evidence-in-chief para 4.9 [Environment Court document 33].

695 1.5% = 150 m^3 (pond volume per hectare of catchment).

While we were generally impressed with Dr Larcombe's evidence and the directness and honesty of his answers throughout most of his cross-examination, we were slightly troubled by his choice of words in paragraph 4.9 and in Table 4.1 and his subsequent explanation of them. He wrote that Table 4.1 contains 'data' but it is headed 'estimated' sediment removal performance. Cross-examined[696] by Ms Campbell he said his estimates were 'based on data'. That and his failure to give confidence limits for his figures entail that we do not rely on his figures and evidence completely.

[461] Mr H E Shaver, a very experienced engineer specialising in stormwater management, (called by the ARC) predicted[697] the performance of a flocculated 3% pond as being 80%. Mr Galbraith was somewhat critical of that figure because it was not extracted under proper cross-examination but in a friendly question by Mr McNamara for the NSCC. However, we accept Mr Shaver's very extensive knowledge of this subject and gave his answer some weight. We give our conclusions on sediment issues at the end of the next section (on effects on the marine environment during major earthworking).

3.11.4 Summary on sediment production and transport issues

After completion of urban development

[462] We predict that, provided that a full treatment train for stormwater is in place, it is likely that sediment deposition will reduce drastically. We are much less certain about what will happen in two situations:

(a) between any major earthworking phase and the installation of the complete treatment train there may be a gap of some years. Unless there are strict conditions on land management during that period and on building practice, there may be adverse sedimentation effects in that intermediate period;

696 Transcript p. 1068 line 10.

697 Mr H E Shaver, supplementary transcript (10 October 2007) at p. 59 [Environment Court document 51A].

(b) in the upper Vaughans catchment in the LB1A and LB 1B Zones. There will need to be very strict controls on the shape and size of individual lots, building, and installing service infrastructure (roads, water supply, stormwater, sewerage systems etc) if serious adverse effects are to be avoided.

3.12 Effects on the marine environment

3.12.1 Introduction

[463] The marine ecologists stated jointly they could not agree on what would constitute a worst case scenario; nor the various interpretations of the NIWA[698] hydrodynamic model they used. What they could agree on was[699]:

- that we cannot predict the consequences of sediment deposition/suspended sediment because we do not have a quantitative analysis of the processes involved at this stage;
- that dissolved stormwater contaminants are unlikely to get to levels in open coast marine environment that cause adverse effects because of moderate high energy environment and level of treatment proposed;
- that there is potential for higher accumulation of contaminants in estuaries.

The last point is of some concern to us given the importance of the Vaughans Stream estuary for inanga breeding. However, we were not given specific evidence on the potential effect of accumulation of contaminants on inanga.

3.12.2 The probability of sediment discharges to the sea during earthworks

[464] To answer some of these questions about the potential for increased sediment production from exposed earthworks and transport and deposition during storms Dr Larcombe calculated the increase in sediment discharges, basing his figures on assumed average areas of earthworks exposed at any one time. In the table below[700] he compares

698 National Institute of Water and Atmospheric Research.
699 Marine ecologists' joint statement para 6 [Environment Court document 6/].
700 Dr M F Larcombe, evidence-in-chief Table 5.4 [Environment Court document 33].

the sediment discharges if various storms occur with the base sediment discharges calculated earlier:

Table 5.4 Increase in total Long Bay catchment sediment discharge with 14.6 hectares of earthworks under NSCC SP and 30 ha of earthworks under Landco SP.

Rain event	Sediment from existing landuse	Total sediment discharged		Increase in sediment discharged	
		With 14.6 ha earthworks	With 30 ha earthworks	With 14.6 ha earthworks	With 30 ha earthworks
	Tonnes	Tonnes	Tonnes	%	%
Annual average	347	361	375	4.0	8.0
1 year ARI	129	129	129	0	0
5 year ARI intense	502	516	532	2.8	6.0
25 year ARI intense	1210	1273	1339	5.2	10.7

To predict the possible sediment production Dr Larcombe[701] selected from his Table 5.4:

> ... the intense 5 year ARI sediment mass discharges to calculate my estimated sediment deposition depths in the coastal environment, because the intense 5 year ARI storm would occur on average once in 8.5 earthworks seasons, which corresponded reasonably with the expected duration of the proposed earthworks.

He added[702]:

> As the deposition depth estimates are proportional to the sediment mass input (for similar stormwater inflow flow rates) it is a simple matter to calculate sediment deposition depths for any other sediment mass inputs.

[465] We accept Dr Larcombe's prediction there is an event with a probability of nearly 1.0 (or 100%) which will discharge an extra 30 tonnes (approximately) of sediment in Long Bay for the Landco structure plan compared with existing land use. That predicted event is a 5 year ARI rain event with 30 ha of exposed earthworks during

701 Dr M F Larcombe, rebuttal evidence para 4.20 [Environment Court document 33A].
702 Dr M F Larcombe, evidence-in-chief para 4.20 [Environment Court document 33A].

the 8.5 earthworks seasons it is assumed it would take to complete the work. We also accept Dr Bell's evidence that it is not correct to say that such an event would occur once every 8.5 earthworks seasons, as more than one such storm or greater could occur in that time window. He stated that there was an 18% chance that an event of that size (5 year ARI) or bigger may occur in any one year and further that does not preclude more than one of these events occurring in any one year.[703] Dr Bell also wrote[704]:

> ... there would still be a 17% chance that a less-frequent 25-year ARI event will occur or be exceeded over a development period of 8 'earthworks seasons' - a not altogether small probability... (Emphasis added)

Dr Larcombe in his rebuttal evidence[705] said the correct figure is a 19% probability. On Dr Larcombe's figures that would, for the Landco SP, increase the sediment discharge by 129 tonnes[706]. We are mindful at this point of Mr Schueler's evidence that as two-thirds of sediment from urban development typically comes from channel erosion; it is likely that total sediment discharge is underestimated in these figures relating only to earthworks. We also take into account the caution expressed by both Dr Larcombe[707] and Mr Shaver[708] that uncertainties attach to the management, maintenance and monitoring of site and stormwater treatment systems. Failures can occur due to design, construction and operational problems, and unexpected events.

3.12.3 The effects of sediment

[466] As for the effects of any sediment on marine ecosystems, Dr Thrush stated that terrestrial sediment is a highly significant contaminant in the coastal marine environment and that it can have direct effects due to deposition on the seabed or elevated suspended sediment concentrations.

[467] Dr Larcombe wrote[709] that:

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703 Dr R G Bell, evidence-in-chief, para 2.3 [Environment Court document 54].
704 Dr R G Bell, evidence-in-chief para 2.5 [Environment Court document 54].
705 Dr M F Larcombe, rebuttal evidence para 5.6 [Environment Court document 33A].
706 Dr M F Larcombe, evidence-in-chief Table 5.4 which gives figures of 1339 - 1210 tonnes [Environment Court document 33].
707 Transcript page 1110.
708 Transcript, 10 October 2007, pp 56 & 57.
709 Dr M F Larcombe, evidence-in-chief para 6.1 [Environment Court document 33].

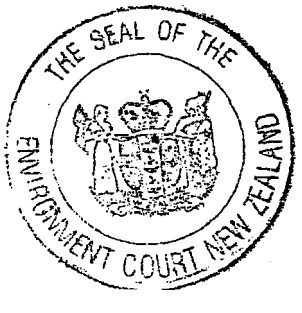
> ... high concentration of suspended solids in earthworks stormwater discharges can cause a number of problems in freshwater and marine receiving environments as a result of adverse effects on colour and clarity of the water; the reduction of light intensity which can limit plant productivity and the vision of fishes and other aquatic animals; the clogging of gills in both vertebrates and invertebrates and interference with the feeding of filter feeding organisms.

[468] Dr de Luca-Abbott wrote[710] that:

> ... current scientific understanding is that sediment deposition less than 3mm is unlikely to have long-term adverse effects on the marine ecology in these soft sediment habitats, but there is less data relating to the effects on rocky reef habitats.

[469] We read and heard the following scientific evidence on potential adverse effects resulting from increased sediment deposition. Dr M Green gave modelling evidence[711] that "under unexceptional" circumstances sediment discharged from the streams will cross sensitive reef habitats at the northern (Piripiri) and southern (Toroa Point) ends of the Long Bay embayment; some will be deposited on the seabed and reefs; suspended sediment concentrations will increase; sediment depths/concentrations cannot be quantified, but there is a linear relationship such that, for example, if the load is doubled then so is the depth of deposition and concentration.

[470] Dr Kelly identified[712] two reef species thought to be vulnerable to increased sediment. Dr Thrush did not describe the state of the soft sediment community, but listed 20 species found in a 1997 survey and stated that the soft-sediment habitats are important at Long Bay. He wrote that deposits greater than 2-3 cm can be "catastrophic". He said experiments in sub-tidal and inter-tidal habitats with thin-smears (3-7 mm in depth) of sediment have revealed negative (adverse) impacts. Also, filter feeding and benthic species are sensitive to suspended sediment levels; especially enduring elevated levels. It is reasonable to assume a history of sediment impacts at Long Bay. In Dr Thrush's opinion it is possible that sediment levels in soft sediment habitats could be approaching a "tipping point"; or it is possible only tolerant species



710 Dr S de Luca-Abbott, evidence-in-chief para 3.8 [Environment Court document 36].
711 Dr M Green, evidence-in-chief p. 8 *et ff* [Environment Court document 53].
712 Dr S Kelly, evidence-in-chief para 6.9 [Environment Court document 52].

remain - it is not possible to ascertain where Long Bay sits on this continuum[713]. Dr Thrush made no inference about temporal dynamics of the system[714].

[471] Irrespective of the level of scientific knowledge deposition in the order of 6.6 mm could occur at any time if there is a 25 year ARI storm while the land is under the current pastoral regime. Despite that, monitoring indicates the Long Bay sub-tidal reefs are in "good ecological condition with relatively stable communities"[715]. That suggests to us that 6.6 mm depositions (if they have occurred) are not having a significant adverse effect.

[472] We note that none of the scientists identified potential marine sedimentation risks as being of high probability. However Dr Bell advised that there are numerous factors which can affect deposition in different areas during moderate to severe rainstorms and that not all of these processes are fully. understood. Given the complexity he stated it is difficult to ascertain risk of sedimentation in the absence of probabilistic-risk assessment. He described Dr Larcombe's estimates as simplified/limited and of questionable value, including absence of consideration of re-suspension potential[716]. As a consequence Dr Bell considered that some degree of precaution should be exercised when basing decisions on Dr Larcombe's estimates of sediment deposition in the coastal marine area. Dr Thrush opined that in the absence of a detailed or robust assessment of ecological risks a precautionary approach is necessary.

[473] Dr Larcombe explained that in recognition of the high intrinsic value of the Long Bay Marine Reserve and potential sensitivity of aquatic seabed habitats within the Marine Reserve to increased sediment discharges, Landco's proposed sediment control measures included improvements in excess of the current ARC requirements and the NSCC structure plan rules and Long Bay practice notes. He confirmed that the greatest risk was if a very large rainstorm occurred when a large area of earthworks was exposed and that such a risk could be kept to an acceptable level by limiting the area of exposed

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713 Dr S Thrush, evidence in chief p. 6 *et ff* [Environment Court document 47].
714 Transcript 10 October 2007, p.8.
715 Dr S Kelly, evidence-in-chief para 8.1 [Environment Court document 52].
716 Dr R G Bell, evidence-in-chief p. 5 *et ff* [Environment Court document 54].

earthworks. In closing submissions Landco[717] amended its position to seek a 30 ha weekly average earthworks control with a 40 ha maximum. Applying these figures to the provisions of Rule 9A.7.2.6 in the Landco SP comparative text (yellow booklet p.60) we understand that to be 30 ha per week when averaged over the earthworks season (October to April inclusive) for the whole LBSPA and that the 40 ha maximum applies only to the Vaughans catchment.

[474] Dr Larcombe's evidence as to the importance of limiting the area of earthworks exposed at any one time was reinforced by Messrs Shaver, Hartley and Ridley with the latter[718] stating that:

> ...sediment yields are predominantly a function of earthworks area ...

Mr Shaver clarified his position further[719] by stating that a 30 ha maximum limit on the area of earthworks exposed at any one time should apply to the entire LBSPA and not just to each catchment and that it should apply to all sites regardless of size, for example not just to sites greater than 1 ha. The NSCC SP seeks to assess the cumulative effects of large scale earthworking (more than 1 ha) and to ensure that the cumulative exposed surface within the LBSPA does not exceed 10 ha at any one time.

[475] In summary our predictions about sediment production, transport and deposition during large-scale earthworking in relation to the Landco structure plan are:

(a) it is likely or very likely that increased sedimentation will occur within the streams and their tributaries;
(b) there is a medium likelihood (33% to 67%) of an increase in elevated suspended sediment concentrations and deposition of sediment on the seabed;
(c) there is a lower medium likelihood (33% to 50%) that sediment will deposit on reefs in the Marine Reserve;

717 Landco closing submissions para 5.36.
718 Mr G Ridley evidence-in-chief para 8.7 [Environment Court document 32].
719 Mr E Shaver, supplementary statement, paras 2.14 and 2.16 [Environment Court document 51A].

(d) the risk of increased sedimentation is likely to be greater than the current risk from the pastoral regime.

[476] We are not satisfied that Landco's structure plan strategy for control of sediment production and transport, even if the proposed controls, standards and practices are implemented, will avoid adverse effects in the Long Bay Marine Reserve. We consider that in general the NSCC SP strategy is more satisfactory but that it should be amended to ensure that the improved sediment control measures proposed by Dr Larcombe are included and that the provisions relating to the area of earthworks exposed at any one time be for a maximum of 30 ha within the whole of the LBSPA regardless of the area exposed.

3.13 Effects on heritage and whanaungatanga and other values

[477] Landco proposes to mitigate loss of any archaeological and heritage sites as a result of development through:

- preservation of a representative sample of the sites in its northeast facing reserve across Awaruku Ridge;
- retention and publication (through the 'community facility') or the reports on the detailed investigations which will be required to occur at the time that the sites are destroyed, damaged or modified[720];
- reinternment where possible of cultural sites affected by development within proposed reserve areas[721];
- development of a 3D model of all sites in headland which show what the sites would have been like at time they were in use[722]; and
- making information about the culture, history and heritage of the site publicly available through the establishment of a community facility within Zone 7[723].

720 Dr C Phillips, evidence-in-chief para 12.8 [Environment Court document 42].
721 Mr G Olliver, rebuttal evidence para 2.4(c)(ii) [Environment Court document 22].
722 Mr G Olliver, rebuttal evidence para 2.4(c)(i) [Environment Court document 22].
723 Mr G Olliver, rebuttal evidence para 2.4 [Environment Court document 22].

[478] We find that development under either structure plan would not affect the World War II fortifications. The Landco Structure Plan would almost certainly destroy much of the 19th Century ditch and wall 'fence' but would leave a small 'representative' sample. Under the amended NSCC structure plan proposal (given by Mr Mead at the end of the hearing) much of the 19th Century fencing would be protected.

[479] Subject to the small amount of physical mitigation, it is almost certain that the heritage sites on the Awaruku Ridge and Vaughans Slopes (South) will effectively be destroyed, thus we find that the City Plan's Chapter 7 and 11 objectives to protect traditional sites will not be implemented by the Landco structure plan and are unlikely to be implemented by the NSCC structure plan in its July 2007 version. Mr Nugent's amended HPA overlay[724] is likely to be more successful in implementing the objectives: It better achieves the heritage professionals' agreement in relation to the eastern end of the Awaruku Ridge that[725] it:

> ... requires careful management. Much of the archaeological evidence is present on the ground surface while the rest is at most 700 mm deep. The long-term preservation of archaeological sites and landscapes such as that at Long Bay is best achieved by managing them under grass or pasture maintained within a controlled grazing regime baaed on appropriate stock classes and rates. This requires a long-term commitment to active management in accordance with an agreed management plan.

[And]

> It is highly desirable that archaeological sites set aside for preservation have an adequate buffer zone around their perimeter. Buffer zones, managed in the same manner as the sites they surround, minimise the risk of inadvertent damage or penetration by the roots of adjacent trees. Buffers also allow for uncertainties in defining the perimeter of subsurface sites. A 30 m buffer would be an appropriate minimum

724 Mr T D Nugent, Exhibit 82.1 [Environment Court document 82].
725 Agreed statement; Marine, para 6 [Environment Court document 6].

3.14 Effects on the coastal environment and landscape

3.14.1 Introduction

[480] Because parts of the LBSP area north of Vaughans Stream are within the Hauraki Gulf/Long Bay outstanding natural landscape ("ONL"), and because the whole of the LBSPA is within the coastal environment, we have to consider whether the urban development proposed by the two structure plans has adverse effects under section 6(a) and (b) of the RMA. Whether those adverse effects are 'inappropriate'[726] is a judgement that will need to be made in the next part.

[481] The wider landscape context is, as described in Part 1.0 (the facts) of this decision, that the LBSPA is a triangle surrounded by the cityscape of North Shore City to the south, the rural lifestyle landscape to the northwest; and the outstanding natural landscape of the Hauraki Gulf/Long Bay to the east. Further, while most of the LBSPA is part of the rural lifestyle landscape, some of the coastal side north of Vaughans Stream, is part of the outstanding natural landscape. We consider that has two implications: first that part of the outstanding natural landscape area within the LBSP area may be inappropriately developed and provided for in the way that section 6(b) of the Act directs if it is developed for residences; secondly when considering development in the remainder of the LBSPA it needs to be borne in mind that it is part of the coastal environment which is adjacent to a coastal environment with the extra status of outstanding natural landscape.

[482] In order to mitigate potential adverse effects from residences and their activities both buffers and screening were proposed in the two structure plans and by various witnesses. We need to comment on the evidence and submissions about the need for such mitigatory measures and, if imposed, their likely efficacy.

Buffers

[483] As a method to resolve some of the problems Ms Lucas perceived with having development close to (or in the outstanding natural landscape) or in the coastal environment she wrote[727]:

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726 Section 6(a) and (b) of the RMA.

727 Ms D J Lucas, evidence-in-chief para 190 [Environment Court document 68].

> [While] reserve buffers are identified as a technique to "help protect the Regional Park" ... they are an underutilized method. The Park is significantly encroached upon, in particular in Awaruku valley, Awaruku Ridge, Homestead Spur and Grannies Ridge.

Her suggestion of buffers to avoid, remedy or mitigate effects was supported by Mr Nugent for the ARC and by Mr Scott[728] for the Long Bay Society. Mr Olsen, for the ARC, also identified areas adjacent to the Regional Park where he considered that the effects of development should be buffered[729]. Despite the fact that several Landco witnesses relied on buffers to mitigate effects (as we shall see), Mr Bradbourne, also for Landco, mounted a sustained attack[730] on the reasoning behind, and legality of, the proposed buffers. Since he largely raises legal issues, we will discuss them in Part 4.0 of this decision. The alleged practical justification for them we will discuss on a situational basis.

Screening

[484] As for screening, a good deal of Mr Rough's support for the Landco structure plan relied on vegetation as filtering or screening of urban development from views from the Regional Park and elsewhere. We find on the evidence that there are problems with that approach:

(1) Mr Rough acknowledged in cross-examination[731] that owners of properties with views would not want to have any legally enforceable covenants to grow and maintain vegetation which interfered with their views;

(2) Mr Brown, Mr Mead, Mr Olsen[732] and Ms Lucas were doubtful that filtering or screening vegetation would last. Mr Olsen referred[733] to cases where neighbours of regional parks have illegally removed or modified vegetation in the parks to maintain their views. Ms Lucas referred[734] to

728 Mr R B Scott, evidence-in-chief paragraphs 12 and 13 [Environment Court document 83].
729 Mr N W Olsen, evidence-in-chief para 8.3 and Annex 6 [Environment Court document 57].
730 Mr A A Bradbourne, evidence-in-chief paras 4.63 to 4.75; and rebuttal evidence paras 5.1 to 5.15 [Environment Court document 80].
731 Transcript p. 858 (line 5).
732 Mr N W Olsen, evidence-in-chief para 7.5 [Environment Court document 57].
733 Mr N W Olsen, evidence-in-chief para 7.5 [Environment Court document 57].
734 Ms D J Lucas, evidence-in-chief Appendix 6, paragraphs 6 to 8 [Environment Court document 68].

the problems the NSCC has had with landowners removing vegetation illegally;

(3) The Landco structure plan relies on screening in landscape yards which will not fit within the proposed lot sizes[735] or which are not shown on the Landco plan[736] ;

(4) Mr Egerton conceded that the entire Concept Plan modelled by Mr Coggan is "indicative only"[737] with screening incorporated in the model which is not required under the Landco Structure Plan[738].

[485] Those factors are reinforced by the Environment Court's observation of using shrubs and trees for screening. While trees can take a long time to grow - especially if native species like pohutukawa are used (as is proposed in the LBSPA) - they can be pruned, or killed, accidentally or on purpose, very quickly. That is a real issue when one considers the likelihood that any houses built under the structure plan will be there for many generations. The Environment Court has expressed concern in the past about owners not wanting to retain screening: *Thorn v Queenstown Lakes District Counci1*[739]. The common law has an old expression which says, in effect, that the Court should assume that everything will be done which is said will be done. We do not consider that saw can be applied with any confidence in respect of maintaining vegetation as screening. While we have little doubt that the initial planting shown on any structure plan will be carried out, we find, based on the evidence of Mr Brown[740], Mr Olsen, and Ms Lucas[741] and the Court's experience (including of enforcement proceedings) that it is likely over the longer term that there will be major cumulative degradation of screening.

[486] In this coastal environment one of the prime motivations for people to buy sections and later residences will be the presence of views and the potential to maintain or develop views of the Hauraki Gulf. We predict that screening by vegetation is likely to be an unsuccessful technique for completely maintaining the amenities of users of the

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735 Transcript p. 873.
736 Transcript p. 875.
737 Transcript p. 611.
738 Transcript p.816 and 790-792.
739 Decision C10/2005 at [150] and [220] (and in the subsequent W88/2006).
740 Mr S K Brown, evidence-in-chief para 8.17 [Environment Court document 5].
741 Ms D J Lucas, evidence-in-chief appendix 6 [Environment Court document 68].

Regional Park and Marine Reserve during the lifetime of the houses built under the structure plan. In effect, despite the presence of covenants or other instruments to maintain screening or 'filtering', many residences are likely to be visible in part or fully, to users of the public spaces adjacent to the LBSPA.

3.14.2 Effects on the outstanding natural landscape

[487] For Landco Mr Rough predicted that its structure plan would have the following effects[742]:

> ... some outstanding and significant features ... will be protected from inappropriate subdivision, use and development and will in fact become core components on which ecological and visual amenity values within the SPA will be preserved, protected and enhanced

He continued[743]:

> ... development on Landco's land, in accordance with Landco's SP, Illustrative Concept and other associated plans will result in an urban environment of high visual amenity value. The simulations convey that the proposed trees and shrubs will either generally conceal built development within the SPA or they will effectively integrate it into the surrounding environment. An overriding impression that can be gained from the simulations is that, when viewed from outside the SPA, there will appear to be a prevalence of vegetation over built development.

[488] Mr Brown's opinion of Landco's proposed LB2A and 2B Zone along the Grannie's and Piripiri Point Ridges[744] was rather different. He wrote that the Landco structure plan "shows total disregard for the interface with Long Bay Regional Park" which would be[745] "most profoundly affected by the extent and intensity of development promulgated ...". He contrasted that with the large lot Long Bay 1B development proposed under the NSCC structure plan. He described that as[746]:

742 Mr P Rough, evidence-in-chief para 10(a) [Environment Court document 28].
743 Mr P Rough, evidence-in-chief para 10(e) [Environment Court document 28].
744 Mr S K Brown, evidence-in-chief para 8.19 [Environment Court document 5].
745 Mr S K Brown, evidence-in-chief para 8.20 [Environment Court document 5].
746 Mr S K Brown, evidence-in-chief para 8.21 [Environment Court document 5].

> ... still accommodating housing and residential activities ... [while] actively promot[ing] regeneration across both individual properties and the wider ridgeline. ... [I]n the longer term, a heavily treed, or at least vegetated, environment would unfold and afford a backdrop to [Homestead Spur[747]] and Grannies Bay in particular.

[489] Ms Lucas, who was called for the Society, predicted that both structure plans would have adverse effects on the landscape[748]:

- The outstanding natural landscape values of the Long Bay coastal landscape through to Piripiri Point would be significantly affected by either SP. The landscape and natural character values of the Park would be substantially reduced[749];
- The Landco SP would have very significant adverse effects on the natural landscape values and natural character enjoyed in Grannies and Pohutukawa catchments, and the main Long Bay coastline[750] ... The Long Bay Regional Park experience would be very significantly affected through loss of naturalness and remoteness, loss of aesthetic coherence. Long Bay would be degraded as a place of escape.

We find that Ms Lucas has overstated the remoteness value of Long Bay Regional Park, although not by as much as we initially thought in the light of the lay evidence of Long Bay Society members such as Ms D K Gatward who referred to its seclusion and peace[751], Mr P J Matthews who referred to[752] the 'sense of escape' and Ms F D McLaughlin who wrote that[753]:

> This experience of spiritual, mental and emotional recharge, of being refreshed by nature, is one of the most common threads, in people's comments on Long Bay. The escape Long Bay provides is critical to social wellbeing.

[490] We find that Ms Lucas' evidence is more realistic than that of Mr Rough when she assesses the likely effects of the Landco structure plan on the Regional Park. Our two principal reasons for preferring her evidence are first her scepticism about the effectiveness of the screening on which Mr Rough relies; and secondly our concern that

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747 His name for this spur was "Vaughans Stream Escarpment".
748 Ms D J Lucas, evidence-in-chief para 197 [Environment Court document 68].
749 Ms D J Lucas, evidence-in-chief para 198 [Environment Court document 68].
750 Ms D J Lucas, evidence-in-chief para 197 [Environment Court document 68].
751 Ms D K Gatward, evidence-in-chief para 3.1 [Environment Court document 59].
Mr P J Matthews, evidence-in-chief para 4.2 [Environment Court document 60].
752 Ms F D McLaughlin, evidence-in-chief para 5.8 [Environment Court document 65].

Mr Rough, while recognising the value of the outstanding natural features, has understated the value of the landscape in which they are set because he has not treated Homestead Spur, Grannie's Ridge and Piripiri Point Ridge as part of the outstanding natural landscape we have found them to be the edge of.

[491] We will consider the possible effects of the NSCC structure plan below. We turn to the specific features on the edge of the outstanding natural landscape of Hauraki Gulf/Long Bay.

The Homestead Spur

[492] The NSCC structure plan proposes large lot development in this area. The Landco structure plan generally proposes (conventional) more dense residential development mitigated somewhat by street planting along parts of the Park boundary and a reserve at the foot of the spur in the south-eastern corner near Vaughans Stream (at least on some plans). However, on a closer analysis the Landco SP and evidence are quite confusing about the treatment of the interface between the Landco land (as it currently is) and the Regional Park between Vaughans Stream and where this spur joins the Grannie's Ridge. Mr Rough relied on photo-simulations which relied on one concept plan, but earthworks and other concept plans showed quite different zonings up to the boundary.

[493] Mr Olsen considered[754] that development of this area "would be prominent and could be extremely intrusive on the Park". Mr Coombs, also for the ARC, had a similar concern with the NSCC structure plan. He wrote[755]:

> One concern I have relating to the Long Bay 1B Zone and NSCC's Earthworks Plan is the proposal to use the gully immediately adjacent to the Regional Park boundary for the deposition of large amounts of earthworks fill. The need to dispose of this fill is generated by the cutting required to establish a road linking the proposed village centre to the end of Vaughans Road. Stabilisation works will be required to establish the road and it is expected that subsequent development will cluster either side of the road along this ridgeline. The location of the road is

754 Mr N W Olsen, evidence-in-chief para 7.14 [Environment Court document 57].
755 Mr B T Coombs, evidence-in-chief para 7.22 [Environment Court document 55].

> questionable given that it will likely result in visually prominent development adjacent to and overlooking the site of the new Park entrance. This will materially affect the experience of visitors as they enter and exit the Park. However of particular concern to me is the proposal to deposit large quantities of fill immediately adjacent to the Regional Park in an area of high visual sensitivity.

[494] Ms Lucas described the naturalness of the Homestead Spur[756] as "... important to the natural character, landscape and amenity enjoyed in Lower Vaughans", and was of the opinion that the residential development proposed in the structure plans would "... very significantly adversely affect the Park experience"[757]. She considered a buffer within the LBSPA was necessary[758] to protect the landscape values on the Spur. Mr R J Greenaway, a consultant leisure and open space planner called by Landco, also considered that the effects of urban development up to the boundary needed to be mitigated by a buffer; as for different, ecological, reasons did Dr Slaven, another Landco witness. We predict that unless a buffer is created - specifically one which uses the shape and height of the spur to shield the Regional Park from urban development - both structure plans would have significant adverse effects on the wider landscape and on Homestead Spur.

Grannie's Ridge

[495] Mr Rough considered[759] that development along the Piripiri Point Ridge and along Grannie's Ridge would be appropriate if there was screening vegetation, but inappropriate otherwise. Ms Lucas treated Piripiri Ridge and Grannie's Ridge together (as a larger boomerang shaped Grannie's Ridge[760]). She was of the opinion[761] that residential development under the structure plans would have very significant adverse effects. She added[762]:

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756 She called it the 'Nature Walk' Spur: Ms D J Lucas, evidence-in-chief para 142 [Environment Court document 68].

757 Ms D J Lucas, evidence-in-chief para 143 [Environment Court document 68].

758 Ms D J Lucas, evidence-in-chief para 143 [Environment Court document 68]. (The buffer is as area C on a figure in her Appendix 2).

759 Mr P Rough, rebuttal evidence para 4.16 [Environment Court document 28A].

760 Ms D J Lucas, evidence-in-chief para 138 [Environment Court document 68].

761 Ms D J Lucas, evidence-in-chief para 138 [Environment Court document 68].

762 Ms D J Lucas, evidence-in-chief para 138 [Environment Court document 68].

> The proposal to screen the built environment with vegetation is assessed as not practical or appropriate. Coastal views will be vigorously sought. Extensive evidence available[763] indicates that statutory mechanisms will not secure such screening of valued views.

It was her view that[764] 'built change in the ridgeline should be entirely avoided'.

[496] Called by Landco, Mr Boffa was concerned about development on Grannie's Bay ridge[765]. He had further constructive thoughts after he had given his evidence and gave his qualified approval[766] to a concept which would 'protect visual sensitivities from the Grannie's Bay direction', but allow reasonable use of its land by the landowner. His solution, as we understand it, is to lower the Grannie's Ridge, to bulldoze a flat platform on its crest and recreate 'a ridge (or at least a bund) to the north, setback buildings from the seaward and northern edges, and plant a 10 or 15 metre buffer[767] to stabilise the slope at its base near Vaughans Stream (i.e. on Homestead Spur). We predict if that is carried out then the adverse effects on the coastal landscape and outstanding natural landscape of Hauraki Gulf/Long Bay will be sufficiently reduced that any remaining effects will be reasonably acceptable.

Piripiri Point Ridge

[497] Under the NSCC structure plan that part of the Piripiri Point Ridge within the LBSPA is to be rezoned Long Bay 1B (large lot residential - minimum lot size 5,000 m^2. Under the Landco structure plan it is to be Long Bay 2B(ii) and we have already given Mr Rough's and Ms Lucas' views on that. For the NSCC Mr Brown was of the opinion[768] that under the Landco structure plan:

> Conventional development would ... enclose Grannie's Bay ... on two sides, and would fundamentally change the character of the wider coastal ridgeline.

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763 Ms D J Lucas referred to her evidence-in-chief Appendix 6 [Environment Court document 68].
764 Ms D J Lucas, evidence-in-chief para 141 [Environment Court document 68].
765 Mr F Boffa, evidence-in-chief para 4.5 and Appendix 1 [Environment Court document 29].
766 Mr M G Williams, Fourth Statement of Evidence - attached letter from Mr Boffa [Enviromnent Court document 30].
767 Mr M G Williams, Fourth Statement of Evidence paragraphs 2.16 - 2.18 [Environment Court document 30].
768 Mr S K Brown, evidence-in-chief para 8.17 [Environment Court document 5].

[498] For the ARC, Mr Olsen considered[769] that the NSCC structure plan "introduces elements of urban development that would change its intrinsic rural character" and the Landco structure plan would similarly represent a "significant change to the character of the area". Mr Olsen also wrote[770] "... it is not just the visual intrusion that would adversely effect [sic] the Park but the introduction of urban related activity such as noise from vehicles, motor mowers and people that would detract from the remoteness and quiet ambience of this part of the Park".

[499] We have already referred to Mr Rough's view that the Landco development would be appropriate if there were screening vegetation but not otherwise. Mr Rough wished to screen views from Long Bay and Grannie's Bay beaches. His evidence[771] was that trees (e.g. pohutukawa) can be planted below the houses on the Piripiri Point Ridge (but within the allotments) which will have 'filtering/mitigating functions and the maintenance of distant views'[772]. Having examined his cross-sections[773] in the light of the evidence (already discussed) on the efficacy of screening we consider it unlikely[774] that trees which effectively filter the views from below will be allowed to remain without trimming or worse by owners. Further, the reliance on the ARC planting does not appear to take into account that some of the space in the gully has been left open deliberately[775] "... to preserve some of the panoramic views that people can get from that area out across the Hauraki Gulf". Accordingly we find the Landco criticism misplaced.

[500] In their final submissions counsel for Landco argued[776]:

> ... that the concern of various witnesses about the effects of development on ... [the Piripiri Ridge] is overstated and appears not to take into account the likely changes which will occur in the surrounding area, including:

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769 Mr N W Olsen, evidence-in-chief para 7.17 [Environment Court document 57].
770 Mr N W Olsen, evidence-in-chief para 7.8 [Environment Court document 57].
771 Mr P Rough, rebuttal evidence para 14 *et ff* [Environment Court document 28A].
772 Mr P Rough, rebuttal evidence para 12 [Environment Court document 28A].
773 Mr P Rough, Exhibit PR(R4) [Environment Court document 28A].
774 Mr N W Olsen, evidence-in-chief para 7.17 [Environment Court document 57].
775 Mr N W Olsen, Transcript p. 1603 line 35.
776 Landco Final Submissions para 7.4 *et ff* [Environment Court document 87].

(a) Development on and at the northern end of the ... [Ridge] itself in the form of a road, a carpark, buildings for toilet facilities, cars and buses, and more people visiting this currently more "remote" part of the Regional Park (as foreshadowed by the NSCC Draft Park Management Plan and as discussed by Mr Smith[777]);

(b) Development of up to 26 large dwellings on the western side of the ... [Ridge, in the Okura Catchment][778], and the human activities associated with semi pastoral use, including no doubt mowing.

We are not convinced by that. First, any carpark and other facilities on the northern end of the Piripiri Point Ridge will be on land that has been purchased by the NSCC[779]. We are confident that the location of buildings and carparks is likely to be carefully chosen and landscaped so as to minimise human clutter on the skyline. Secondly, as for the development of large rural lifestyle houses on the western side of the ridge, outside the LBSPA and inside the Okura catchment, their location is controlled as Mr Rough conceded[780] when cross-examined by Ms Campbell.

[501] Mr Rough did not consider, at least in his evidence-in-chief, the effect of a string of houses along the Piripiri Point Ridge on walkers, bikers or other recreationalists within the Long Bay Regional Park above the coastal cliff track. However, while members of the Society are concerned about that, the evidence of Mr Greenaway for Landco, when cross-examined by Mr Williams for the Society[781], was that some people would enjoy seeing the houses. That is an interesting point but looking at the issue dispassionately we find that in the context of North Shore City there are many places where people can walk along the coastal edge or above it and enjoy views of houses in the huge variety which characterises New Zealand suburbs, but, if Piripiri Point Ridge and Grannie's Ridge are developed, there will be few if any places on the City's east coast where people can enjoy such seashore to ridge-top views.

[502] In summary, we find that housing proposed under both structure plans is likely to have very adverse effects on the edge of the outstanding natural landscape which includes Homestead Spur, Grannie's Ridge and Piripiri Point Ridge.

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777 Mr B J Smith, Third Statement of Evidence section 8 [Environment Court document 79].
778 Mr P Rough, rebuttal evidence para 3.18 [Environment Court document 28].
779 Mr N W Olsen, evidence-in-chief para 6.6 [Environment Court document 57].
780 Transcript p. 844.
781 Transcript p. 1345.

3.14.3 Effects on the coastal environment

[503] We need to assess the effects of the proposed structure plans on the natural character of the coastal environment. Acknowledging the agreement of all the landscape architects that the whole of the LBSPA is within the coastal environment, Mr Brown wrote[782]:

> Having made this all embracing statement, it is equally apparent that there are different levels of association or connection with the Hauraki Gulf and even the neighbouring Okura Estuary. Consequently, it is my view that those areas within the structure plan catchment which display an obvious and direct relationship with the Coastal Marine Area (CMA) comprise:
>
> (a) The headland and escarpment frontage of the Awaruku Ridge;
> (b) The Vaughans Flats - with Vaughans Stream; and
> (c) The coastal part of the Vaughans Road Ridge [which in his terms includes the Homestead Spur, Grannies Ridge and the Piripiri Point Ridge].
>
> Areas that have a less immediate relationship with the CMA, but which could still affect perception of the wider coastline comprise:
>
> (a) The rest of the Awaruku Ridge up to Long Bay College and just east of Ashley Road;
> (b) The Vaughans Road Ridge [and Vaughans Slopes] north of Vaughans Stream; and
> (c) More inland margins of the Vaughans Stream corridor.

Mr Brown rated[783] the natural character of all the landscape units (which we have found are not part of the ONL) as either moderate or low (or somewhere between):

[504] In relation to the coastal environment, Mr Rough wrote [784] for Landco:

> The principal loss of natural character of the coastal environment within Landco's land will come about from the conversion of farmland to areas of urban development, but within Landco's boundaries the identified significant landscape features will provide the basis for both the retention and enhancement of natural character to a considerable degree. ... Other significant landscape features, that contribute to the area's natural character, such as areas of remnant/regenerating bush, will be incorporated into Landscape Conservation areas that will abut

782 Mr S K Brown, second statement paras 3.17 and 3.8 [Environment Court document 5A].
783 Mr S K Brown, statement of visual evidence para 3.29 [Environment Court document 5A].
784 Mr P Rough, evidence-in-chief paras 243 to 245 [Environment Court document 28].

> proposed Landscape Enhancement areas, both of which will be contained within areas zoned Reserve ...

[505] He continued[785]:

> ... the quality of the environment [will] in many respects ... actually be improved within the [LB]SPA. This will be an outcome of planting proposals and the preservation, protection and enhancement of remnant regenerating patches of native vegetation, stream corridors and wetlands and the extension and linking of these areas via an interconnected network of reserves.
>
> Development of the SPA will generally result in a loss of the current rural backdrop, which is characterised by pasture, to the Long Bay Regional Park. Pasture-covered slopes will inevitably change to become a backdrop of urban development but the new backdrop will appear to have a prevalence of vegetation over built development[786].

[506] In comparison Mr Rough's predictions about the landscape effects of the NSCC SP were:

> It is my opinion that while the NSCC proposal could, and is likely to, result in a landscape of high visual amenity value it will be more reliant on the ad hoc activities of lot owners to achieve this. By contrast the Landco proposal, with its bold and extensive street and other public area plantings affords a measure of certainty to the achievement of an urban environment of high visual quality[787].

Given that general background evidence we now consider the evidence about specific features within the wider coastal environment so that we can make predictions about the likely effects of implementing the structure plans.

Awaruku Ridge and Headland

[507] Mr Rough wrote:

> [In] the closest area within the SPA boundary that provides a rural backdrop to the high use part of the Regional Park and Long Bay Beach is the South-east Headland, [s]everal dwellings in a development zone on the headland will be variously visible from the Regional Park, the beach

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785 Mr P Rough, evidence-in-chief para 10(f) [Environment Court document 28].
786 Mr P Rough, evidence-in-chief para 10(g) [Environment Court document 28].
787 Mr P Rough, evidence-in-chief para 10(k) [Environment Court document 28].

> and from on the waters off Long Bay. It is my opinion that the dwellings will not constitute inappropriate subdivision, use and development - especially after planting and other mitigating factors have taken effect[788].

Mr Coombs, for the ARC, criticised[789] the two structure plans' zone boundary on the Awaruku Ridge as not protecting the Long Bay Beach and the Regional Park, or the adjacent part of Hauraki Gulf from "the visual effects of domestication". In relation to the Landco structure plan Mr Rough responded[790] that Mr Coombs' statement:

> ... fails to acknowledge that [Awaruku Ridge and Headland] ... have already been impacted for some years by the visual effects of domestication at the Torbay end of Long Bay.

Mr Rough then refers to Figure 14 of his evidence-in-chief[791]. Interestingly that photograph, looking south down Long Bay Beach to existing residential development, is placed side by side with his Figure 15 which shows the existing southeast side and crest of Awaruku Headland. Figure 14 emphasises to us just how much the views of the land in Figure 15 will be domesticated if the Landco structure plan is implemented. We hope it is not unfair to say that Mr Rough's argument seems to be "the Long Bay beach is already damaged, so further injury will make no difference".

[508] Mr Olsen was also concerned that development of Awaruku Ridge and Headland would[792] "... result in an unacceptable adverse visual impact on the ambience of the [Regional] Park". Mr Olsen also expressed his opinion[793] that the Landco structure plan "... places heavy reliance on planting on the private land to mitigate the visual impacts". Mr Rough responded that Mr Olsen was wrong: the planting was to be in the Landco LB7 Zone - Recreation and Heritage Protection - which is intended to be vested as reserve. On reflection it seems to us that is a problem because we do not know, in the absence of a Long Bay development contribution policy, whether the land would vest in

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788 Mr P Rough, evidence-in-chief para 10(h) [Environment Court document 28].
789 Mr B T Coombs, evidence-in-chief para 7.5 (NSCC SP) and 7.12 (Landco SP) [Environment Court document 55].
790 Mr P Rough, rebuttal evidence para 3.10 [Environment Court document 28A].
791 Located after para 62 of his evidence-in-chief [Environment Court document 28].
792 Mr N Olsen, evidence-in-chief para 7.10 [Environment Court document 57].
793 Mr N Olsen, evidence-in-chief para 7.12 [Environment Court document 57].

the NSCC as reserve and, if it did not, whether the NSCC would elect to buy it. Further, Mr Slaven, an ecologist called by Landco, stated:

> ... while I accept that the NSCC is the only body that can determine how it spends public funds, the NSCC has put in the District Plan, and in V66, enhancement-related objectives and it is now being offered, through the Landco SP proposal, an opportunity to give full effect to those objectives. If the NSCC chooses not to take advantage of the opportunity presented, it certainly cannot blame the party offering it such an opportunity.

There is a rather combative tone to those sentences. They rather give the impression from that evidence[794] that if the reserves in the Landco structure plan were not paid for at market prices they would not be vested in the NSCC. But that misses the point which is that the primary issue (particularly for an ecologist like Mr Slaven) is the location, shape and size of necessary ecological and passive amenity areas, not their ownership. In any event - regardless of whether the planting would be on private or public land - we consider that Mr Olsen is likely correct to be[795] "sceptical that these plantings would be implemented or ... survive, in a way that ensured the desired level of mitigation".

[509] Also in relation to the Awaruku Headland (Landco SP Zone LB 7) Mr Rough conceded[796] that some of his visual simulations rely on significant screening planting, when the prospect of such vegetation being granted consent is fanciful.

[510] For our site inspection Landco had attached a pole to a tractor representing the height of a single-storey house on an allotment ("LB3") above the existing cottages near the Ranger Station. Our impression of the height of the pole coupled with imagining the bulk of a house on this 'million-dollar' site was still of buildings along the skyline and close enough to be a real presence for people in the vicinity of the Long Bay reserve road. On that basis, and also because of the admissions by Mr Rough in cross-examination, we prefer the evidence of Mr Coombs, Mr Olsen and Ms Lucas. We predict that buildings under the Landco structure plan are unlikely to be screened for the

794 Mr D C Slaven, evidence-in-chief para 3.12 [Environment Court document 39].
795 Mr N W Olsen, evidence-in-chief para 7.11 [Environment Court document 57].
796 Transcript p. 829.

life of the houses and likely to be so intrusive as to dominate the nearby parts of Long Bay Beach and Regional Park.

[511] All the landscape witnesses recognised a need to provide some distance or a buffer on the Awaruku Ridge or Headland to mitigate the effects on users of Long Bay Regional Park and the coastal marine area. In order from the beach up the ridge, the suggestions were:

(1) Mr Rough wrote that[797] "... dwellings will be set well back on the crest of the ridge and ... partially screened and visually well-integrated into their setting ... by proposed midden gardens and scattered pohutukawa trees ...",

(2) Mr Boffa suggested[798] no development below the 30 metre contour;

(3) Mr Brown suggested the "rollover point" was at about the 30 metre contour for his 'Significant Landscape Feature' and that was the level at which 'the threat of high visibility is sufficiently reduced'[799];

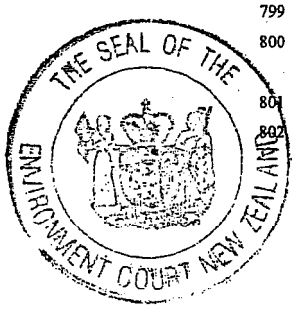
(4) Mr Olsen (a senior recreation advisor of the ARC) suggested[800] a rather larger area than that shown in Mr Brown's Significant Landscape Feature;

(5) Mr Coombs, called by the ARC, suggests[801] a landscape buffer pushing housing further back from the (new) edge to the Regional Park;

(6) Ms Lucas suggested a line much further up Awaruku Ridge toward Long Bay College.

[512] We do not entirely accept Mr Brown's evidence[802] that '... a substantially higher level of amenity protection [cannot be achieved] short of restricting development to the vicinity of Long Bay College ...' or Ms Lucas' evidence to much the same effect. We do accept that wherever houses are built on the Awaruku Ridge they will be visible from places within the Regional Park and its entrance along Beach Road. But it seems to us

797 Mr P Rough, evidence-in-chief para 256 [Environment Court document 28].
798 Mr F Boffa, evidence-in-chief para 4.10 [Environment Court document 29].
799 Mr S Brown, Statement of Visual Evidence para 3.21 [Environment Court document 5A].
800 Mr N W Olsen, evidence-in-chief para 8.3(a) and his annexure 6 [Environment Court document 57].
801 Mr B T Coombs, evidence-in-chief para 7.16(b) [Environment Court document 55].
802 Mr S Brown, evidence-in-chief para 4.7 [Environment Court document 5].



that Ms Lucas misses Mr Brown's point (quoted above) that the 'rest of Awaruku Ridge' (i.e. behind the headland) has a 'less immediate relationship with the [coast]'.

[513] To avoid buildings being domineering when viewed from the Regional Park they might have to be set well back from the frontal scarp. That is, when viewed from the northeast they need to be behind the existing line of conifers on the crest of Awaruku headland if the adverse effects are to be significantly mitigated. That is because, as buildings are moved back from the Awaruku Headland and back up the Ridge, there is a diminution in the level of adverse effect on Long Bay Regional Park, but less so on views from Beach Road and the entrance to the Park. We find that there is a worse problem when viewing the Awaruku headland and the seaward end of Awaruku Ridge from the south and southeast because views of the new development will not recede for residents in the Awaruku catchment . However, we do not consider it is appropriate to mitigate those effects. The impacts to be mitigated for the wellbeing of existing and future residents of the greater Long Bay and Torbay areas as well as visitors to the Regional Park are the views directly towards and from that Park.

Vaughans Flats

[514] One of the significant landscape features which Mr Rough says will be protected and enhanced is the lower Vaughans Flats (or floodplain)[803]. We were shown various photographs and 3-D models of this area[804] as portrayed by Mr Coggan on the basis of Mr Lord's "Illustrative Concept Plan"[805]. They show a wetland and its small area of open water. There was considerable discrepancy between that evidence (and that of Landco's ecological witnesses) and the evidence of the stormwater experts for Landco. For example, Mr Cochrane's Figure 3 showed or implied:

- a revegetated floodplain and what is likely to be a large pond[806] (not a wetland) of average depth 0.3 metres;
- artificial bunds to hold the stormwater ponds[807];

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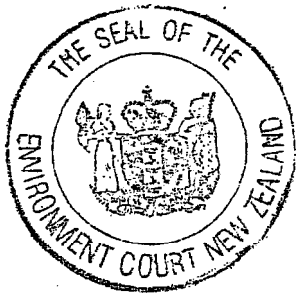
803 Mr P Rough, evidence-in-chief paragraphs 10(a) and (f) and 247 [Environment Court document 28].
804 Mr T Coggan, evidence-in-chief Appendix E p. 7 [Environment Court document 27].
805 Attached to Mr Coggan's evidence as attachment "D" [Environment Court document 27].
806 Mr P R Cochrane, evidence-in-chief para 30 [Enviromnent Court document 34].
807 Mr P R Cochrane, evidence-in-chief para 30 [Environment Court document 34].



- pipes to convey water from the Vaughans Slopes (South) and Glenvar Slopes across the valley to the stormwater ponds.

None of those features were shown on the plans of Mr Slaven, an ecologist for Landco, nor on Mr Rough's plans. Mr Rough also described boardwalks around the wetland, but that seems to require a wetland rather than a pond. Nor were these shown on Mr Slaven's figure[808].

[515] Mr Coombs was concerned[809] that the natural quality of the flats would be changed by bunds between 1.5. high (wetland 3 - to the east) and three metres high (wetland 1, to the west). He regarded those as "foreign landforms"[810] which with any bridges or pipes[811] crossing Vaughans Stream should have been assessed for their impact by Landco. Mr Coombs' view was that it would be "vastly preferable"[812] if stormwater were managed without the need for a pipe/bridge to cross the valley floor, and desirable for bunds to be removed also.

Vaughans Road Ridge

[516] Under the NSCC structure plan the land on the Vaughans Slopes North is to be large lot residential - Long Bay 1B, and under the Landco structure plan it will be the denser LB 2A or 2B Zone. Both structure plans provide a 'ridgeline protection corridor'.

[517] While we accept that some residential development of conventional urban densities is acceptable from a landscape perspective on some of the Vaughans Slopes (North) we also read and heard evidence about the treatment of development at the top end of the slopes adjacent to Vaughans Road itself. In particular there is a length of about 250 metres (the frontages of 202, 214, 216-218, and 220-228 Vaughans Road[813]) where the road traverses a low saddle between existing development on the south side of

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808 Mr D Slaven, evidence-in-chief figure 3.3 [Environment Court document 39].
809 Mr B T Coombs, supplementary evidence para 2 [Environment Court document 55A].
810 Mr B T Coombs, supplementary evidence para 4 [Environment Court document 55A].
811 Mr B T Coombs, supplementary evidence para 6 [Environment Court document 55A].
812 Mr B T Coombs, supplementary evidence para 8 [Environment Court document 55A].
813 Mr T D Nugent, evidence-in-chief para 5.1 [Environment Court document 82].

the road and the point where the road currently terminates - which is where Grannie's Ridge continues east and Piripiri Point Ridge turns north.

[518] Of Landco's structure plan Mr Rough wrote:

> ... on the crest of Vaughans Spur, [w]hile Landco's proposed development on this spur is reasonably intensive, a combination of factors such as the proposed pattern of development, lot size, zone rules and integrative planting will create an urban environment that will be far more visually sympathetic to its somewhat exposed location, and the surrounding environment, than is currently being achieved by some existing large-lot development on Vaughans Road Ridge. These comments also apply to views of Landco's development as seen from the Okura River catchment[814].

[519] For the NSCC structure plan Mr Brown favoured large lot development[815] - a LB 1B zoning with the idea that the landform would be 'left as intact as possible'[816], and for 'major' tree planting to occur along Vaughans Road which would provide a more natural backdrop to development and a green softening interface with Okura.

[520] Mr Mead for the NSCC in his fifth statement of evidence proposed that the two sides of Vaughans Road be treated equally in terms of intensity of residential development. To that end he wrote that he could support[817]:

- A 10m rather than 7.5m set back (see Map DM5.3 which shows the possible set backs);
- The introduction of [an] assessment criterion that requires the consideration of the landscape impacts of dwellings to be taken into account;
- Development standards that require lots along the ridgeline to have at least a 50m frontage to the road This will stop subdivision of lots formed by long "skinny" lots that maximise the number of building platforms along the ridgeline. Under this approach, the number of houses along the Long Bay side of the ridgeline is likely to be similar to that possible on the Okura side (12 as compared to 6 on the Okura side).

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814 Mr P Rough, evidence-in-chief para 10(i) [Environment Court document 28].
815 Mr S K Brown, evidence-in-chief para 3.56 [Environment Court document 5].
816 Mr S K Brown, evidence-in-chief para 3.55 [Environment Court document 5].
817 Mr D W A Mead, 5th statement para 7.7 [Environment Court document 3E].

[521] Mr Coombs, giving evidence for the ARC, was concemed[818] that the NSCC structure plan does not adequately protect the visual integrity of the Vaughans Road ridge as viewed from within the Okura area, especially down at the Okura boat ramp (about 1.2 kms away) and on some locations on the Okura walkway. For that reason the ARC suggests a greater setback than the 7.5 metres proposed in the Landco SP and NSCC SP, for a distance of about 250 metres towards the end of Vaughans Road. More specifically, Mr Nugent for the ARC proposed amendments to policy 17B.3.1.10 (controlling building design and location) and LB 1 Rule 17B.6.1.3(a), including that no building be-erected within 100 metres of the 250 metre portion of road[819] "that exceeds the average elevation of Vaughans Road within that portion". Given potentially affected land drops to the south at approximately 1 in 5[820], Mr Nugent's rule would require two-storey dwellings (of say eight metres) to be set back 40 metres from the frontage and single storey dwellings (of say five metres) 25 metres in order to remain beneath the 60 masl road level. However Mr Coombs accepted under cross-examination that if there were planting along the southern edge of Vaughans Road that could provide screening of anything that might be seen beyond it as viewed from Okura[821].

[522] Counsel for Landco relies[822] on:

(a) protection of views from Okura as not being an adequate justification for a greater setback;
(b) the 24 large houses that are likely to be built in the area on the northern side of the road.

As for (a), we agree that a setback beyond ten metres is not needed; as for (b), we were given plans for that part of the Okura catchment which suggest more buildings are not likely to be erected close to the skyline on this section of Vaughans Road especially given the provisions in the NSCC District Plan guarding against that.

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818 Mr B T Coombs, evidence-in-chief para 8.9 [Environment Court document 55].
819 The "saddle".
820 Mr T D Nugent, evidence-in-chief para 5.3 [Environment Court document 82].
821 Transcript page 1582 line 31.
822 Landco's Final Submissions para 7.19 [Environment Court document 87].

[523] In coming to make our prediction about the probability of development under either structure plan having the adverse effect(s) of concern to the ARC witnesses, we have been especially mindful:

- of the considerable distance of the viewing points of most concern from the "saddle"[823];
- that at least 25 new dwellings are likely to be built[824] on the south Okura slopes between the viewing points and the "saddle" over time although we accept that none will be in the saddle on the north side of the Vaughans Road Ridge due to the restrictions in the City Plan's appendix just referred to;
- those dwellings will alter the existing cultured natural character of the coastal environment and landscape to such an extent that the effect of development visible on the saddle will not be significant. Mr Mead concurred with this assessment, saying the relevant ARC witnesses overstated the likely effect[825];
- that dwellings along the subject length will be set back at least 7.5 metres on the previously described slope angle;
- there is to be a boulevard of trees planted along Vaughans Road[826], plus the additional prospect of frontage walls and private planting;
- views from Long Bay and the Regional Park to the saddle will be across land to be developed for LB 2, 3 and 4 purposes.

We find that the effect of concern to the ARC is unlikely to result and that it would be disproportionate to impose a policy (and implementing rule) of the type its witnesses proposed. The relatively minor adverse environmental effects of development would be out-weighed by the positive social and economic benefits of landowners being able to develop their land unencumbered by a control of the type sought.

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823 Mr P Rough, evidence-in-chief graphic attachment volume 2 p. 20 [Environment Court document 28B].
824 City Plan Appendix 9A(ii) p. 9-92.
825 Mr D Mead, fifth statement of evidence para 7.3 [Environment Court document 3E].
826 NSCC Structure plan 17B.6.1.7 Explanation and Reasons.

3.15 Traffic and transport

3.15.1 Introduction

[524] The closing submissions for NSCC on traffic/transport usefully focussed on the three matters in dispute:

- Connections: counsel pointed to the agreed Joint Statement as support for four connections from the LBSP area to the existing network [Vaughans Road, Valley Road[827], Ashley Avenue and Beach Road extension]. It was submitted that none of the relevant witnesses accepted a reduction in this number despite cross-examination on the need for Beach Road and Vaughans Road extensions.
- Road gradients: Dr Somerville submitted that while the NSCC SP has some prospective bus routes steeper than the corresponding Landco alternative they result from NSCC's more moderate earthworks scheme; occur over relatively short lengths; and are not inconsistent with relevant road design standards.
- Proposed road bisecting village centre: it was submitted that the Landco SP, which has a proposed road bisecting the village centre, may create an unsafe pedestrian environment and the NSCC's road lay-out should be preferred.

[525] The Okura Environment Group opposed "The proposals for two crossings of the Vaughans Stream and the crossing of Awaruku wetland ..."[828]. We record that, subject to confirmation by modelling, both structure plans now allow for a single traffic crossing of the Stream and the Group took no issue with the joint proposal that any additional crossing(s) be for pedestrians/cycles. The Group called no professionally qualified traffic engineering evidence and its cross-examination of relevant witnesses focussed on the proposed Vaughans Road connection. For the Long Bay Society Mr Williams questioned whether the Beach Road connection is necessary.

827 Variously referred to by witnesses as Glenvar Ridge Road and Valley Road.
828 OEG, opening submissions paragraphs 3 and 3.7, road pattern [Environment Court document 69].

[526] For Landco Mr Galbraith[829] submitted that Landco's structure plan, with the village centre arranged around a four-way intersection, would increase activity and vitality in the core without causing adverse safety effects. Mr Galbraith also indicated in opening that some other minor transportation matters remained in contention, including road gradients for bus services[830]. He revisited the latter in Landco's closing submissions[831] in the context of the consequences of zone boundary changes for earthworks and, in turn, road gradients.

[527] We now review the evidence on alleged effects having regard to the relevant settled design principles, and if necessary objective and policies[832] in the contested areas. Most relevant is the design principle[833] that the structure plan should provide safe and convenient road, walking and cycle access, and maximise public transport options.

3.15.2 Connections

[528] Two of the four proposed network connections are disputed. We are satisfied on the basis of Landco's traffic expert, Mr Lee-Jones' answers in cross-examination[834], and the evidence of others[835], that it is necessary to allow for a proposed road from the LBSP area to Vaughans Road. We find it likely that LBSP area residents will want to access destinations to the north of Vaughans Road and that Okura residents will want to conveniently access existing and planned facilities in the LBSP area. To this extent a connection would enhance rather than reduce choice. We also find that, irrespective of the zoning pattern ultimately adopted for the North Vaughans Slopes, separate access to that area via Vaughans Road is necessary as insurance against the potential effects of a civil emergency on the Slopes coinciding with the Vaughans Stream bridge being impassable. Although doubtless sincere, we find that Mr Johnston's evidence suffered

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829 Landco opening submissions, 24 July 2007, paragraphs 6.16 to 6.26 [Environment Court document 21].

830 Landco opening submissions para 6.24 [Enviromnent Court document 21] and Mr I Clark, evidence-in-chief para 143.8 [Environment Court document 43].

831 Landco closing submissions, 5 November 2007 para 1.16(a) [Environment Court document 87].

832 Objective 12.3.1: Transport System Effectiveness, and related policies 2, 3, 7, and 10. Also Policy 9.3.2.1(b).

833 NSCC Design Principle 17.5.5(4).

834 Transcript pp. 495 to 501.

835 Mr I Constable, rebuttal evidence section 6 [Environment Court document 18A] and Mr I Clark., Transcript p. 1335 line 22.

from a lack of professional expertise and objectivity. Neither he nor the Group(s) for whom he appeared can reasonably expect Okura north of Vaughans Road to remain an island insulated in all regards from the development contemplated by relevant statutory instruments and the earlier metropolitan urban limits decision of the Court.

[529] The second connection in dispute was the Beach Road extension. When asked by Mr Williams what would be lost by deleting the Beach Road extension up and over the Awaruku Ridge, Mr Lee-Jones answered carefully that it would be "... a good road network, serving the proposed land uses there"[836]. We note his emphasis on the proposed land uses, being those in the existent structure plans. He explained that the Beach Road extension was expected to service approximately 25% of total LBSP area trips[837] and that at full development this would represent some 6,000 vehicles/day[838]. We take that figure to be a rounded average of the year 2021 predicted data of 5,000 vpd of the NSCC[838] and 7,800 vpd of the Landco structure plan. In Mr Lee-Jones' opinion existing streets linking Ashley Avenue and Beach Road - such as Glenvar Road and County Road - would not be suitable alternatives for a Beach Road extension because of their geometry. He stated that the "alternatives" presently carry about 1,000 vehicles/day[840] and opined that a high cost would be incurred in terms of disturbance to property owners if the streets were to be upgraded. We note that County Road's present alignment does not prevent its use as a bus route[841]. Mr Constable, a consulting traffic engineer called by NSCC, confirmed that Glenvar Road is not very suitable for heavy traffic[842] but stated that "Council is presently proposing to reconstruct [it] ... to improve geometries and safety"[843]. We find this consistent with Glenvar Road's Secondary (District) arterial status[844]. With hindsight it would have assisted the Court to know whether it is to be upgraded over its full length.

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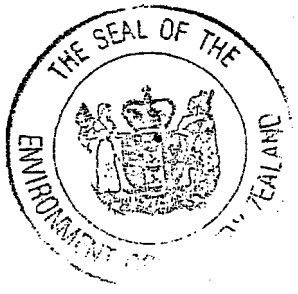
836 Transcript p. 491 lines 1-6.
837 Transcript p. 489 line 45.
838 Transcript p. 493 line 1.
839 Mr I Constable, evidence-in-chief annexures IC04 and IC06 respectively [Environment Court document 18] subsequently overtaken by Mr I Clark's evidence using an updated SATURN traffic model [Environment Court document 43].
840 Transcript p. 492 line 41.
841 Mr I Constable, evidence-in-chief annexure IC05 [Environment Court document 18].
842 The Court has interpreted this as a reference to volume not weight.
843 Mr I Constable, evidence-in-chief para 5.1 [Environment Court document 18].
844 NSCC District Plan Maps Appendix 1: Roading Hierarchy.

[530] We were troubled initially by some traffic projections presented by Mr Constable for full development in 2021 and appreciate the qualifications that he quite properly volunteered[845]. Subsequent to writing his evidence-in-chief the 2005 model, which he had used, was supplanted by a SATURN model developed collaboratively by Landco and NSCC. Mr Clark, a transportation planning consultant called by Landco, presented results from that model. In round terms, projected NSCC SP volumes on Beach Road at Toroa Street (Torbay shops) are predicted to be 30% lower than the corresponding Landco SP figures. Although Mr Constable questioned Mr Clark's categorisation of overall differences as "generally modest"[846] he did not suggest that the lower NSCC SP volume removed the need for Beach Road extension.

[531] In cross-examination[847], Mr Constable opined that without Beach Road extension vehicles travelling south on arterial routes would make greater use of Glenvar Road west and that while this would necessitate upgrading its junction with East Coast Road, that work was required under current structure plan planning. Mr Williams also explored with Mr Constable how elimination of the planned Beach Road extension might impact on LBSP area bus services. His questions focussed on Mr Constable's plan (Exhibit IC-9) which shows existing and possible express routes and north-south local routes. We found Mr Constable answers fair and constructive in a challenging "conceptual" environment, namely that:

- A satisfactory express route to East Coast Road could be provided more or less from the village centre via Awaruku Ridge, Ashley Road and Glenvar Road west. However, he had concerns about the directness and therefore attractiveness of the Awaruku Ridge section shown on IC-9. We share those concerns and shall return to them.
- A possible alternative local route for North South travel could follow the above express route to Ashley Avenue and then proceed by what we perceive from IC-9 to be Ian Sage/Glenvar Roads to the existing Beach Road.



845 Mr I Constable, evidence-in-chief paragraphs 7.1 to 7.3 [Environment Court document 18].
846 Mr I Constable, rebuttal evidence para 3.4 [Environment Court document 18A].
847 Transcript p. 507 line 30 ff.

[532] Having heard the questions of earlier witnesses, Mr Clark helpfully took the opportunity to run the updated traffic model to ascertain how traffic would be distributed onto other parts of the network if the Beach Road extension were deleted[848]. He advised that for the Landco SP:

> ... if you take that road out the flow basically go[es] to the Glenvar Ridge Road and Ashley Avenue extension. And my main concern is that approximately 4,000 vehicles per day would be on Ashley Avenue extension which will be of major concern next to schools, the senior school and primary school.

And having modelled the same scenario for the NSCC SP he advised that:

> ... the flows there are 3,000 vehicles per day with the road in place and 2,000 of those are reassigned to go pass Ashley Avenue, so pass the schools.

The latter is not an entirely clear statement and we interpret it to mean for the NSCC SP, without Beach Road extension, 2,000 vehicles/day would be reassigned to Ashley Avenue causing it to have a greater (undefined) volume. Mr Clark did not consider potential traffic management measures within the Ashley Avenue road reserve, or intersection upgrades, to be capable of redressing his primary concern of increasing "... through traffic adjacent to areas of significant leisure activity, especially young children"[849]. He also saw traffic management measures potentially causing a less even loading on planned LBSP area connections. Mr Clark further opined that during the morning and afternoon school peaks it would be "essential" to have Beach Road extension in place and that at other times of the day it would be "very desirable"[850]. We are left to ponder how Mr Clark factored in Long Bay primary school having its access off Ralph Eagles Place and not Ashley Avenue[851]; and how he considers the many existing secondary schools in Auckland, which front arterial roads with greater traffic volumes than those projected for Ashley Avenue, cope. It seems to us that both Mr

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848 Transcript p. 1322 ff.
849 Transcript p. 1324 lines 3 - 4.
850 Transcript p. 1324 lines 30 - 37.
851 Which Mr Clark recognised (evidence-in-chief para 102 [Environment Court Document 43]).

Clark and the NSCC traffic witnesses may have exaggerated in terms of potential traffic effects on the schools.

[533] Mr Clark answered many questions in cross-examination from Mr Williams on alternative express and local bus routes from the LBSP area without Beach Road extension. Again much of the cross-examination focused on alternatives illustrated in Mr Constable's figure[852] and led us to conclude that:

- express buses from the LBSP area with destinations in the south of the City or Albany BRT could satisfactorily connect with Glenvar Road west via either Glenvar Ridge road or Ashley Avenue. From a public transport perspective Ashley Avenue is a particularly desirable route on account of the schools it would service. However, indirect express bus routes of the type illustrated on Exhibit IC-9 are not attractive to patrons or PT service providers[853].
- Mr Clark envisaged local services on Beach Road extension[854] that would "... continue to Torbay and then down through the Bays perhaps through Browns Bay"[855]. That does not rule out the possibility of express buses proceeding via Beach Road and routes such as Glamorgan Drive or Carlisle Road to East Coast Road.
- Care is required in considering the deletion of Beach Road extension to ensure Awaruku Ridge residents have suitable access to both express and local bus services.
- The NSCC SP is consistent with achieving a PT "local connector network" service for a future population of 5,000, as provided for by the Auckland Passenger Transport Network Plan 2006 - 2016, ARTA November 2006 [856]. We assume the Landco SP would perform similarly.

852 Mr I Constable, evidence-in-chief, Exhibit IC-9 [Environment Court document 18].
853 Transcript pp 1327 - 1328 and Mr I Clark, evidence-in-chief Appendix D Memo of 9/2/07 para 3.2 [Environment Court document 43].
854 Transcript p. 1329.
855 Transcript p. 1329 lines 41-43.
856 Transcript p. 1333 line 10 and Exhibit IDC:E.

- Existing and possible bus routes to which the LBSP area might connect include Ian Sage Avenue, Awaruku Road, Stredwick Drive and County Road[857].

3.15.3 Village Centre road layout

[534] In Mr Constable's opinion it is preferable that an arterial road carrying a "reasonable volume" of traffic not bisect the village centre and this is a design feature best avoided in a greenfields situation[858]. He conceded that the NSCC SP would also require pedestrians to cross roads to reach the centre but considered that it would generate fewer movements on account of its smaller size and containment in one block. He accepted in cross-examination that whatever configuration of streets and land uses was adopted safe pedestrian crossing arrangements would be required[859]. Mr Clark's opinion was that collector roads around the centre shown on Landco SP: Infrastructure Map (April 2007) would relieve pedestrian pressures on the section of road in question[860]. He also stated that as both structure plans now have a single bridge crossing focusing traffic at one point, road layout is less of a distinguishing feature[861]. Mr Clark further considered that potential NSCC concerns about pedestrian movements involving a possible day-care centre in the village centre are lessened by the probability that children would be accompanied by a responsible caregiver[862].

[535] We consider that the Landco SP would implement operative Objective 12.3.1 by adopting methods of the type identified[863], so it is likely that a sustainable outcome would result. The same could equally be said of the NSCC SP. In short, the vitality that Landco seeks is likely to be delivered in a safely managed environment even if the village centre is split by a proposed road.

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857 Mr I Clark, evidence-in-chief Appendix D Memo 9/2/07 [Environment Court document 43].
858 Mr I Constable, rebuttal evidence para 3.10 [Environment Court document 18A].
859 Transcript p. 515.
860 Mr I Clark, evidence-in-chief para 143.3 [Environment Court document 43].
861 Mr I Clark evidence-in-chief para 143.4 [Environment Court document 43].
862 Transcript p. 1333 line 37.
863 NSCC City Plan para 12.3.1.

3.15.4 Road gradients

[536] In his rebuttal evidence Mr Constable responded to Mr Clark's criticism that proposed 1 in 8 (12.5%) gradients on NSCC SP roads are not suitable for use by buses[864] and contrary to an unwritten Auckland-practice "rule of thumb"[865]. Mr Constable stated that although relevant local Design Standards generally prescribe grades of 10% or less they allow for exceptions in given circumstances such as steep terrain, particularly over short lengths. Mr Constable identified 5 existing arterial roads on the North Shore with grades of 10% or more[866]. He fairly conceded that "... it is desirable that bus routes have more gentle grades..." but added "... in steep terrain that is often not practicable without dramatically altering land forms ..."[867]. Table 2 of his rebuttal evidence provides a helpful summary of proposed NSCC SP roads with gradients greater than 10%. Of the three roads affected, the steepest [12.08%] and longest length [197m] are both on Beach Road extension. We accept his contention that, depending on the finally settled zoning pattern, there may be no need for buses to operate on the steeper North Vaughans Slopes beyond the LB 3 and 4 zone[s][868]. He noted that the steep sections identified in his Table 2 are interspersed with relatively flat sections at the top or bottom of hills, suitable for bus stop usage. It was his evidence that the Design Standards about gradients are as much concerned with vehicle operating costs as safety[869].

[537] For Landco Mr Clark saw things differently, opining that a rule change allowing grades steeper than 1 in 12 would be of concern "... primarily for road safety reasons, particularly in wet conditions for downhill buses, the steeper the gradient the greater the difficulty in stopping"[870].

[538] We are mindful that the engineering feasibility of roads in both structure plans has yet to be fully confirmed[871] and there is uncertainty about what gradients will ultimately be achieved. With that qualification in the background, we find it highly

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864 Mr I Constable, rebuttal evidence paragraphs 3.13 - .18 [Environment Court document 18A].
865 Mr I Clark, evidence-in-chief para 143.8 [Environment Court document 43].
866 Mr I Constable, rebuttal evidence Table 1 p.7 [Environment Court document 18A].
861 Mr I Constable, rebuttal evidence para 3.16 [Environment Court document 18A].
868 Mr I Constable, rebuttal evidence para 4.1 [Environment Court document 18A].
869 Transcript p. 518 lines 20 - 35.
870 Transcript: Mr Galbraith Examination p. 1321.
871 Mr I Clark, evidence-in-chief para 152.3 [Environment Court document 43].

probable that Mr Constable's conclusion that the NSCC SP proposed Road network would be suitable for bus transport[872] is correct.

[872] Mr I Constable, rebuttal evidence para 3.18 [Environment Court document 18A].

4.0 Assessing the structure plan maps and strategies

4.1 Introduction

4.11 What is the appropriate 'development concept' for the LBSPA?

[539] The City Plan's policy 17.4.1(8)(b) directs that preparation of a structure plan requires a 'development concept'. We deduce that the 'essential components'[873] of the two proposed structure plans that we are to assess comprise (respectively):

(1) (a) the NSCC's structure plan maps (as amended during the course of the hearing[874]); and

(b) Landco's structure plan maps; and

(2) in each case the explanatory Land Use Strategy 17B.1.3 shown in the 'Comparative Text' (The Yellow Book)[875].

Confusion shows in the evidence of many witnesses (and some counsel) as a result of a failure to distinguish the City Plan's requirements for preparing a 'development concept' for a structure plan, from the means proposed to implement it (i.e. proposed Chapters 9A and 17B).

[540] Further, we have already stated that the most likely interpretation of the words and scheme of the NSCC operative City Plan about preparing a structure plan is simply to apply the objectives, policies and design principles of Chapter 17 and that the intention of the hierarchy of objectives (in the three tiers) is that only if the design principles are ambiguous, or mutually inconsistent, should Tier 1, 2 or 3 objectives or policies be implemented. In fact no party argued that the design principles were inconsistent or ambiguous, so theoretically we need to go no higher. Accordingly, we now examine the structure plans in the light of:

(1) the relevant policies in Chapter 17 - policies 17.4.1(2)-(9);

(2) the design principles in Chapter 17; and

(3) specific Tier 3 objectives and policies where necessary.

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873 See Policy 17.4.1(7) [City Plan p. 17-4].

874 Mr D W A Mead, fifth statement of evidence, plans 5.1 to 5.3 [Environment Court document 3E].

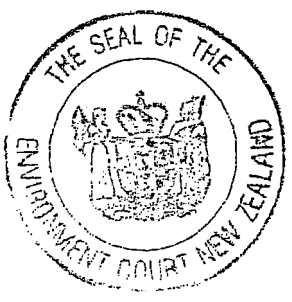
875 The Yellow Book, p. 79 [Environment Court document 1A].

[541] An alternative interpretation is to read the 'design principles' down as methods - which is what they are described as - and to design the structure plan under Tier 3 objectives with reference to the Tier 2 and Tier 1 objectives in the City Plan's hierarchy where necessary. Out of caution and because we see some tension between some of the policies implementing objective 17.4.1, we adopt that approach in Part 4.3 below.

4.12 The requirements of Chapter 17 of the City Plan

[542] The policies in Chapter 17 which guide the development of structure plans are found[876] following objective 17.4.1. The relevant policies are:

> ...
>
> 3. By utilising a structure planning process to achieve a comprehensive and environmentally responsive approach to development
> 4. By the Council, or a developer in conjunction with the Council, preparing a Structure Plan ... which:
> a) Will provide a comprehensive framework for development recognising existing environmental, landscape, cultural and general amenity values.
> b) Will facilitate the development of convenient and safe neighbourhoods for future residents.
> c) Will facilitate the creation of residential neighbourhoods with distinct identities which are designed to meet residents' requirements, particularly for attractive, convenient and safe neighbourhoods.
> d) Recognises that development should reflect the capacity of the existing landform without the need for significant modification.
> 5. By the Council determining the boundaries of Structure Plans having regard to:
> a) The likely community of interest, topographic features, primary roading and open space network.
> b) Utility servicing considerations, notably water and sewerage.
> c) The likely timing for development completion.
>
> 6. By the Council, as part of the Structure Planning process, initiating discussions with agencies who are responsible for the provision of services and facilities such as schools, health services and public transport, to ensure that adequate provision is made for these activities.



876 NSCC City Plan p. 17-4.

7. By incorporating the essential components of the completed Structure Plan into the District Plan by a Change to the Plan.
8. By requiring that every Structure Plan comprises two parts, being:
   a) A Land Analysis Background Report which provides a comprehensive analysis of the land's physical, environmental, cultural and landscape features.
   b) A Development Concept which directly relates to the findings of the Land Analysis Background Report
9. By utilising the Structure Planning process to ensure that development within the Residential Expansion zone occurs either adjacent to existing communities or in units of sufficient size to create a community with associated services (minimum area, approximately 50 hectares).

All of those policies (bar one) are covered below, either expressly or implicitly when discussing design principles using the same wording. The exception is policy 9. We record here that is met by both structure plans as the development they propose is adjacent to Glenvar Road and/or Ashley Avenue and large enough to create a community of more than 50 hectares.

[543] When we examine the structure plan maps in the light of our findings on the evidence, we must ensure compliance with the requirements for preparation of a structure plan as given in Methods 17.5.4.1 and 17.5.4.2 of the district plan. The former requires a Land Analysis Background Report, which is to address five matters, namely information on physical characteristics; environmental values; cultural features; infrastructure and landscape. The latter is to include a landscape assessment which identifies those features which contribute most significantly to the area's character and which could provide a 'framework[877] for urbanisation'. Method 17.5.4.2 provides for[878] the structure plan to directly relate to the findings of the Land Analysis Background Report and address, in summary, the following seven matters:

- those contained in Appendix 17A: Structure Plans: Issues Relevant to Particular Areas: Okura/Long Bay[879];
- major road, cycle and pedestrian routes;

877 Method 17.5.4.1(5).
878 Structure Plan method 17.5.4.2 [City Plan p. 17-9].
879 We apprehend that neither the title nor contents of the relevant part of the Appendix have changed since the 1996 MUL decision.

- critical roads in areas of high environmental sensitivity;
- the indicative location of major activities;
- future reserves where existing vegetation should remain;
- apply relevant zonings or development densities;
- indicative location of stormwater ponds.

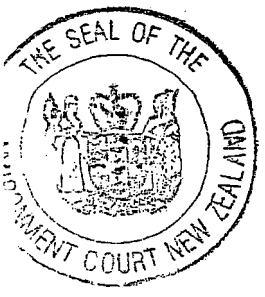
The Methods in Chapter 17 assume that the findings of the Land Analysis Background Report are accepted. As this case shows that is an optimistic assumption. We must make our own assessments on the basis of the evidence we read and heard.

[544] The structure plan process is about preparing a development concept by weighing all the relevant considerations according to the various statutory formulae and then *(inter alia)* drawing lines on maps to show the areas in which different policies about appropriate activities apply. Landco strongly promoted its structure plan throughout the hearing. NSCC, on the other hand, after listening to the evidence of the other parties, decided[880] to modify the NSCC SP that it wished the Court to consider. Where the lines are drawn on maps, and the strategic policies that should apply to each resulting area (or zone), together comprise the ultimate discretionary decision we have to make.

4.13 The design principles in Chapter 17

[545] We consider it is useful to re-order and integrate the design principles[881] in Chapter 17 in order to reflect the programme referred to in that chapter 17. A more logical order of design principles in the district plan as applicable to the Long Bay structure plan area divides the principles into three groups relating to:

(a) landscape and ecological characteristics;
(b) stormwater and flooding;
(c) identity and design.



880 NSCC Closing Submissions and Mr D W A Mead, Fifth Statement of Evidence [Environment Court document 3E].

861 17.5.5 Design Principles and 17.5.6 Additional Design Principles for Long Bay.

[546] The re-ordered principles can then be listed as directing the City Council to provide for the three topics as follows:

[A] Landscape and ecology

[A1] Protect significant landscape and ecological values of the area, on the basis that such protection may involve appropriate zoning and/or land purchase [17.5.6(8)].

[A2] Exclude areas of significant vegetation from further development [17.5.6(9)].

[A3] [Protect] Natural environmental values ... [by] reflect[ing] capacity of the existing landform without the need for significant modification ... [17.5.5(1)].

[A4] Provide for avoidance and/or mitigation of adverse landscape and visual effects of development on the Long Bay Regional Park [17.5.6(3)].

[B] Stormwater Management

[B1] ... Ensur[e] stormwater management is an integral component of overall catchment and/or site development ... [17.5.5(5)].

[B2] Protect habitat values and water quality generally within the Long Bay area and in particular within the sediment deposition zones in the Okura Estuary by a range of methods, including restrictive zoning, stormwater quality detention and treatment ponds (during and after development), and the provision of an extended buffer area along the estuary margin [17.5.6(1)].

[B3] Recognise and protect the ecological values of the Long Bay/Okura Marine Reserve [17.5.6(2)].

[C] Identity and Design

[C1] Use the results of landscape and ecological surveys to determine the carrying capacity of the land in order to manage, in a sustainable and environmentally sensitive manner, the impact of human activity in the area [17.5.6(7)].

[C2] Respond ... to the land's natural characteristics, setting, landmarks and views ... in the design and layout ... [and] group ... reserves, community facilities ... shops and small ... businesses ... [17.5.5(3)].

[C3] Roading [must] provide safe and convenient access ... maximise public transport access ... [and] facilitate safe and convenient walking and cycling ... [17.5.5(4)].

[C4] Enhance public access to the coast through the provision of pedestrian, cycle or road access to the coast and estuary [17.5.6(5)].

[C5] [Identify] a reserve network ... [17.5.5(2)]

[C6] Incorporate in the Structure Plan the esplanade reserve requirements resulting from the Council's Coastline Survey so that esplanade reserves can be acquired when subdivision occurs and a coastal walkway (Crimson Walkway) created [17.5.6(4)].

[C7] Maximise the recreational opportunities of the area by ensuring that esplanade reserves, sports fields, neighbourhood reserves and scenic bush reserves are provided for [17.5.6(6)].

[C8] Incorporate means of ameliorating the visual impacts of development by controlling location and design of housing, roading and services [17.5.6(10)].

Design principle C6 is irrelevant, so we discuss it no further.

[547] We have mentioned that it was a repeated theme of Landco's case that other parties were wrong to take a 'constraints-based approach' starting with a premise that adverse effects on the environmental values of the LBSP area should be avoided at all costs, and then using the space left over for development. However, that is, to some extent, what the principles in paragraphs 17.5.5 and 17.5.6 in Chapter 17 do. Landco did not try to argue that the Design Principles are illegal. Rather its witnesses largely ignored them. For the reasons discussed in Part 2.0 (the Law) of this decision in relation to Part 2 of the Act, we hold that it is open for a local authority to determine in its district plan that particular areas are sufficiently important that development should be limited to the space left after protection of identified valued resources.

4.2 Do the structure plans implement the settled design principles?

4.21 Landscape and ecology

A1 Protect landscape and ecological values[882]

[548] The NSCC's structure plan was prepared with the benefit of landscape reports, albeit slightly flawed through a failure to consider where the landscapes of the area begin and end, as we described in Part 1.0 (the Facts) of this decision. However, we do not have to take that further in respect of the NSCC SP because the NSCC conceded at the end of the hearing, with Mr Mead's supplementary evidence, that it was appropriate to draw wider buffers between the coast (loosely) and the start of housing within the coastal environment.

882 Long Bay additional principle 17.5.6(8) and (9) [NSCC City Plan: section 17: p. 17-9].

[549] Landco's original structure plan as proposed in its submission to the NSCC was prepared in 'a very limited time frame'[883] as a submission. Mr Rough subsequently gave a report and advice which Landco states were fed into the Landco structure plan as it was amended. We have found that the Landco witnesses have consistently under-estimated both the impact of urban development on the coastal environment and particularly that part which is in the outstanding natural landscape of the Hauraki Gulf/Long Bay and the contribution of the existing coastal environment to the wellbeing of present and future residents and visitors to the Long Bay area. We have also found that the Landco structure plan is unlikely to protect the relevant landscape values and that when the matters of national importance on Awaruku Ridge are considered together - the coastal environment and the heritage landscape - a potentially more suitable line for protecting those values excludes residential developments by pulling such development back west of the 19th Century ditch and bank fence and, in the catchment of stream 2, uphill from the Maori heritage sites. Finally, we accept the evidence of Mr Coombs, of Ms Lucas[884], and of Mr Mead that further north neither the Landco structure plan nor the NSCC structure plan adequately protect the Piripiri Point Ridge, Grannie's Ridge, or the Homestead Spur from inappropriate development. ARC witnesses generally overstated the likely effects of development on the portion of Vaughans Road ridge of concern to them. We find that, subject to a 10 metre setback of the type suggested by Mr Mead[885], control flexibility criteria which differentiate between single and multi-storey buildings, and a policy requiring planting along the road, the design principle would be met.

A2 Protect significant areas of indigenous vegetation[886]

[550] The existing terrestrial values are proposed to be protected by the strategies of both structure plans. Plan "A"[887] annexed to this decision shows bush patches (coloured dark green). The experts agreed that those and all other 'remnants' are important and should be protected. We have found that all of them are 'significant' within the

883 Mr G Olliver, evidence-in-chief para 5.4(a) [Enviroment Court document 22].
884 Ms D J Lucas, evidence-in-chief paras 158 *et ff* [Environment Court document 68].
885 Mr D W Mead, fifth statement para 7.3 [Environment Court document 3E].
886 Design principles 17.5.6(8) and (9).
887 Exhibit DK07.

meaning of section 6(c) of the RMA. We have also predicted that under the Landco SP several of those bush patches are unlikely to survive the earthworks implicit in the Landco structure plan.

A3 Protect from significant modification to the landform[888]

[551] Given the scale of the earthworks proposed we readily find that neither of the structure plan maps implements the principle that they should 'reflect the capacity of the existing landform without significant modification'[889]. The NSCC structure plan requires about 2.1 million cubic metres of earthworks and the Landco structure plan 5 million cubic metres which are large figures by New Zealand standards. Further, those earthworks are to occur predominantly on hilly land. That is not apparent from the zoning map in the Landco Structure Plan (part of Attachment "B" to this decision) which looks as if it is on flat ground. In contrast the more organic (on a 2-D plan) road lines drawn on the NSCC structure plan respond a little more to the topography and better demonstrate the statement that 'Ecological quality looks messy'[890]. The NSCC structure plan still requires significant, earthworks, and the secondary roads appear spaced to allow two section-depths between frontages.

[552] The other very important aspect of the topography - important because landslips and flood can affect people's lives and wellbeing - is that much of the land is very unstable as we described in Part 1.0 of this decision. We have recorded the agreement of the engineers that urban development can be undertaken with sufficient careful earthworks, but of course the design and scale of earthworks have ecological and landscape implications which we must consider. The City Plan's concerns about these issues are reflected in the design principle that the urban design should not require significant landform modification'. We find that the NSCC structure plan implements that principle to a greater extent than the Landco SP.

[553] There is one area where the more intrusive approach of Landco may actually be beneficial and that is on the Vaughans Slopes (North) in the area east of the bush

888 Design principles 17.5.5(1).
889 Design Principle 17.5.5.(1)(i) [NSCC City Plan: section 17: p. 17-9].
890 The American author Ms Joan Nassauer quoted by Ms D J Lucas in her evidence-in-chief (para 167) [Environment Court document 68].

remnant (SLF 103) in stream 1C and west of Homestead Spur. The NSCC structure plan zones much of this land as LB1 for large lot development, whereas Landco has more intensive LB2 zoning. One of Landco's arguments in favour of its approach was that these slopes are classified as "high hazard"[891] and that its design solution of stabilising the slopes from the Vaughans Flats up to Vaughans Road and Grannie's Ridge would avoid subsequent secondary earthworks. We consider the spirit of the design principle for the Vaughans Slopes North (east of Stream 1C) is met by more earthworking now if it prevents the need for subsequent additional and extensive site works.

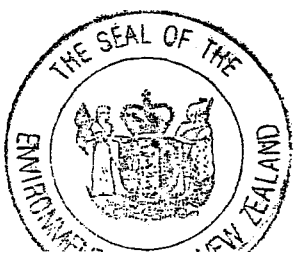
A4 Avoid/mitigate adverse landscape and visual effects on the Regional Park[882]

[554] We have predicted that both structure plans would cause adverse visual effects on the Regional Park and the Hauraki Gulf/Long Bay outstanding natural landscape unless further changes are made to the plans. In particular concerns arise at:

- Awaruku headland and the eastern end of the Awaruku Ridge;
- Homestead Spur;
- Grannie's Ridge;
- Piripiri Point Ridge.

We turn to the issue of how further mitigation can take place later in this decision.

[555] Both structure plan maps and their strategies attempt to ameliorate the visual impacts of development by controlling the location of housing and using planting to screen and/or soften buildings. In Part 3 of this decision we predicted that neither of the structure plans is likely to be successful in achieving that on the Awaruku Ridge or Headland or the areas within the Hauraki Gulf/Long Bay ONL.



891 Mr J D Johnson, evidence-in-chief Appendix 3, Figure 5 [Environment Court document 31].
892 Long Bay additional principle 17.5.6(3) [NSCC City Plan: section 17: p. 17-9].

4.22 Stormwater Management[893]

B1 Integrated stormwater management

[556] The first relevant principle requires the NSCC to:

> ... ensur[e] stormwater management is an integral component of overall catchment and/or site development (or redevelopment). The location, design and function of stormwater management techniques should be designed to:
>
> i) Provide an integrated and comprehensive approach to land development that recognises the importance of considering stormwater management from the beginning of a development process, including the design of subdivision to minimise impervious surfaces and protect natural areas through land use and development controls:
>
> ii) Consider the impacts of land use on stormwater quantity and quality.
>
> iii) Protect the integrity of the 1% AEP flood plain and secondary flow path.
>
> iv) Protect and enhance the ecological value of riparian areas.
>
> v) Protect and enhance aquatic ecosystems.
>
> vi) Minimise the effect of stormwater contaminants on streams and the marine receiving environment.
>
> vii) Facilitate multiple objectives where appropriate, including provision of recreational facilities and protection of significant natural and physical resources.

All relevant witnesses eventually accepted that a comprehensive stormwater treatment train approach was necessary. It is implicit in this decision that these stormwater policies[894] must be implemented, and there are some rules which start to achieve that. For example, both structure plans allow for alternative overland flow paths[895] to be identified and protected[896]. They also both seek to safeguard the integrity of the 1% AEP floodplain[897].

[557] Our predictions from Part 3.0 are that the proposed Landco structure plan will not minimise impervious surfaces. Landco argues that does not matter everywhere because *(inter alia)* the catchment of stream 1 already acts as if it is impervious. However, that argument runs into difficulty with principles 5(iv) and (v) because we

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893 Design Principle 17.5.5(5) [NSCC City Plan: section 17: p. 17-9].
894 Objective 8.3.5(2) [NSCC City Plan pp. 8-18 and 8-19].
895 In accordance with Design Principle 17.5.5(5)(iii) (Yellow Book).
896 Refer NSCC and Landco 9A.3.2.12.
897 Refer 9A.3.2.13 and .14 respectively.

also concluded that the ecological value of riparian areas and aquatic systems will very likely be further reduced not protected and enhanced. Those design principles are also not implemented by the Landco structure plan in another respect. We predicted that it is highly likely that under the Landco structure plan the base flow of the main stem of Vaughans Stream will be reduced by 30%.

B2 Protection of the water quality and habitat of Vaughans Stream

[558] The issues that most concern us with respect to the Vaughans Stream catchment are:

(1) the treatment of headwaters of all tributaries;
(2) connectivity of streams 1C and 1D with the main stream;
(3) stream 2 on the Vaughans Flats;
(4) dewatering of the main stem below stream 9;
(5) changes in stream hydrology during freshes and floods.

We do not consider that the Landco structure plan implements the design principles.

B3 Ecological values of the marine reserve [898]

[559] We have predicted that after development the ecological values of the marine reserve will very likely experience reduced sedimentation from the LBSP area under both structure plans. While earthworks are carried out or are open there is a slightly greater probability than at present of sediment deposition. That risk can be appropriately managed by limiting the area of earthworks which can occur contemporaneously and by suitable resource consent conditions.

4.23 Identity and design[899]

C1 Determine carrying capacity

[560] Our conclusion on 'using landscape and ecological surveys to determine carrying capacity'[900] is that the NSCC structure plan has approximately followed this principle. The Landco structure plan has not. It has deliberately eschewed what it calls a

898 Additional principle 17.5.6(2) [NSCC City Plan: section 17: p. 17-9].
899 Design Principle 17.5.5(3) [NSCC City Plan: section 17: p. 17-9].
900 Long Bay additional principle 17.5.6(7) [NSCC City Plan: section 17: p. 17-9].

'constraints-based' approach and adopted an 'opportunities' approach. Setting aside the labelling as a polemic exercise which ignores the strong anthropocentric thrust of most of sections 6 to 8 of the RMA, in any event the Landco structure plan approach does not follow the unchallenged principle in the district plan. That is supported by the design principle 17.5.5(1)(i)[901] which seeks that natural environmental values should:

> be protected by ... ensuring that ... the residential zoning or density reflect the capacity of the existing landform without the need for significant modification.

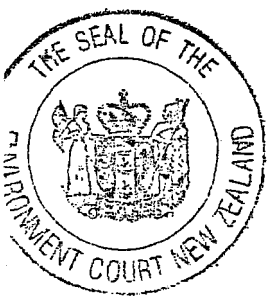
We find that principle is very unlikely to be implemented by either of the proposed structure plans, both of which, as we have said, contemplate very large scale earthworks by New Zealand standards. As Mr Brown wrote for the NSCC, if the two principles referred to in this paragraph were to be fully applied then the potential for urban development in the LBSPA would be largely limited to ridge tops and sides; and close to Long Bay Regional Park, housing would be prevented to protect both the surroundings of the park, and to protect the cultural and historic heritage of the eastern end of Awaruku Ridge.

C2 Respond to the land's natural characteristics

[561] There are two parts to design principle 17.5.5(3): we accept that the second - grouping of facilities - is met by the structure plans for the most part. Under both plans community facilities, shops and small businesses are grouped together around the village-centre proposed immediately south of Vaughans Stream.

[562] As to the first part of the principle we accept Ms Lucas's evidence that under the Landco structure plan[902]:

> [t]he heavily modified urbanised form proposed would consist of terraced rows of conventional housing. The proposal does not meet the requirement of section 17.5.5(3)(i) of the NSCC District Plan for the design and layout to achieve identity through responding to the land's natural characteristics, as well as to the setting, landmarks and views. The design focuses on the views and largely ignores the natural characteristics and the setting.



901 NSCC city plan p. 17-9.

902 Ms D J Lucas, evidence-in-chief paras 153-155 [Environment Court document 68].

> I entirely disagree with my colleagues Mr Boffa and Mr Rough that the design is innovative. Instead it is an outdated approach When I researched the conceptual design, the typology identified is Victorian neo-classical based on a combined grid and radial plan.
>
> The concept is one appropriate for gentle terrain being inappropriately applied to rolling and steep lands. It is perhaps a reminder of the designs for Dunedin prepared in Edinburgh 150 years ago in ignorance of the terrain. Whilst again designed offshore, there can be no excuse for such ignorance today ...

While expressed in rather stronger language than is completely professional, we consider that passage is quite perceptive about the ancestry of the Landco concept and its inadequate response to almost all of the first part of design principle 17.5.5(3). Mr Brown was similarly concerned that the Landco SP[903]:

> ... fails to take into account topography that is far more akin to the slopes around central Auckland's Newton Gully than the soft, gently rolling topography implied by many of the drawings and sketches ... to date.

[563] The City Plan's policy 17.4.1.4(d) and principle 17.5.5(1)(i) require avoidance of 'significant landform modification' in a structure plan. We find that neither of the structure plans responds strongly to the land's natural characteristics - rather they very substantially modify them. We accept that they do - especially the Landco structure plan - largely respond to the views outside the structure plan area.

C3 Roading[904]

[564] Both structure plans attempt to increase the use of public transport. We find that the location of proposed roads does achieve the design principles, in particular in trying to maximise public transport. By historical accident or design Long Bay has bus service levels approaching Regional Transport Network frequencies. We find it is likely that more workers would commute by bus than elsewhere in Auckland[905]. Mr Clark argued[906] that it would generally be appropriate to have more people at Long Bay to utilise the existing services and planned ARTA investment ($38m) to fulfil "not only

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903 Mr S K Brown., evidence-in-chief para 8.30 [Environment Court document 5].
904 Design Principle 17.5.5(4) [NSCC City Plan: section 17: p. 17-9].
905 Transcript p. 1137, lines 5-10.
906 Mr I Clark, rebuttal evidence section 3 p. 5 ff [Environment Court document 43A].

site specific objectives for LB, but also the region's wider traffic and transportation goals". He considered the Landco structure plan scored better than NSCC in this respect[907] and we accept that.

[565] The best indication of ARTA's position is from Mr Clark[908] who advised us that an ARTA officer stated it could be assumed that buses would serve Beach Road extension and Ashley Avenue by existing services; the terminus would be North of Vaughans Stream; and that services should not be assumed on Valley Road [i.e. an extension along Glenvar Ridge].

[566] Principle 17.5.5(4) is also concerned with walking and cycling paths and both structure plans propose these although we have doubts as to the mechanics of how they propose to achieve that (see the next point).

C4 Enhanced access[909]

[567] This principle will be met in respect of roads: both structure plans propose a new road to the Regional Park on Vaughans Flats. The provision of paths - as important as roads under the design principle - is less certain because we have doubts about the mechanisms proposed in the Landco structure plan. Many of the Landco paths seem to be on 'reserves' which may not be reserved.

C5 Reserve Network[910]

[568] We find that both structure plans identify reserve networks. The difficulty - and it is a considerable one - with the Landco structure plan is that it proposes all its reserves be public reserves when, on Mr Mead's evidence (already quoted in an earlier part of this decision), the NSCC cannot necessarily afford to, or may not wish to, buy Landco's proposed 'reserves'. Mr van Jaarsveld wrote[911]:

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907 Mr I Clark, rebuttal evidence para 3.5 [Environment Court document 43A].
908 Mr I Clark, evidence-in-chief Annex B Minutes 20.2.07 (refer item 3 3rd bullet) [Environment Court document 43].
909 Long Bay additional principle 17.5.6(5) [NSCC City Plan: section 17: p. 17-9].
910 Design Principle 17.5.5(2) [NSCC City Plan. section 17: p. 17-9].
911 Mr M van Jaarsveld, evidence-in-chief para 5.12 [Environment Court document 16].

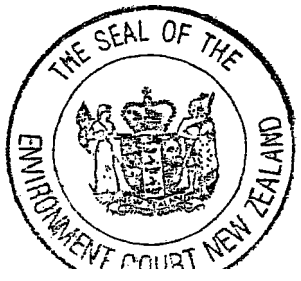
> It is also not clear to me whether the development contributions from the Landco plan would be sufficient to pay for the reserves offered, or whether additional funding would be required.

That is a reasonable position as the NSCC is still to formulate a Development Contributions policy for the LBSPA[912], and until that is finalised a firm finding on 'affordability' cannot be made.

C7 Recreational opportunities maximised[913]

[569] We do not consider further sports fields are needed: there are fields in the grounds of both the schools in the structure plan area, as well as the Ashley Reserve, which is centrally placed within the LBSP area.

[570] The NSCC structure plan map has two neighbourhood reserves on Awaruku Ridge, and one on the Vaughans Slopes North. There are few if any provisions for neighbourhood reserves on the Landco structure plan map but it does provide for very extensive bush reserves to be purchased by the NSCC (if reserve contributions are used up). While it is clear that the NSCC wants reserves on the Vaughans Flats, we have already commented on the impracticality and lack of ecological viability of the Landco structure plan in relation to other reserves it proposes be vested in the NSCC. Our experience generally is that local authorities do not take kindly to having steep, high-maintenance (weed control/fencing) areas foisted on them, let alone having (possibly) to pay for them as Landco suggests here. The problems are exacerbated when we consider that some of the proposed reserves (e.g. on stream 1C) are of very dubious viability as designed on the Landco structure plan - see Annexure "B" to this decision - because it is not readily apparent what natural feature the proposal is based on, and because we consider that the bush is unlikely to survive the earthworks necessary to implement the Landco structure plan in and around its catchment.



912 See the NSCC proposed policy 9A.3.6.4.
913 Long Bay additional principle 17.5.6(6) [NSCC City Plan: section 17: p. 17-9].

4.3 Implementing the higher order objectives and policies of the City Plan

4.31 Introduction

[571] In order to resolve any tension between any of policies 17.4.1(2) to (9), and in case we are wrong about the role and importance of the design principles we now evaluate the structure plans under the relevant Tier 3 chapters of the City Plan: viz Chapters 7, 8, 9, 11 and 12. Finally in this subpart we consider whether any other Tier 3 objectives and policies are relevant.

4.32 Tangata whenua/cultural heritage (Chapters 7 and 11 of the City Plan)

[572] We have found that Awaruku Ridge is very important to several iwi especially, on the evidence given to us, to Te Kawerau a Maki. On that evidence this is the last relatively unmodified site of importance to that iwi within North Shore City. The unequivocal objective[914] in the district plan appears to require there should be as close to complete protection of the Maori heritage sites on Awaruku Ridge as is reasonably possible.

[573] It is difficult to see how objective 7.4 is being adequately implemented by either the NSCC structure plan or the Landco structure plan because both allow modification, to differing degrees, of Maori traditional sites on the Awaruku Ridge. We have described how the NSCC proposes discretionary activity status (albeit subject to management plans) over the whole of its proposed LB 7 Zone; and the Landco structure plan preserves an earthworked reserve, removes other sites where they are under proposed roads and houses, and seals others under development. In our view neither of the structure plans achieves the objective[915] of protecting traditional sites of special significance to Te Kawerau a Maki and other iwi. That was acknowledged by the NSCC in Mr Mead's amended plan[916] lodged at the end of the hearing.

[574] All of the archaeological sites on the Ridge (pre-European Maori, 19th century Maori and European settler) together with the neighbouring World War II features, collectively create a resource of national importance. Objectives 11.3.2 and 11.3.3 are

914 NSCC Objective 7.4.
915 Objectives 11.3.2 and 11.3.3 [NSCC City Plan pp. 11-4 and 11-5].
916 Mr D W A Mead, fifth statement of evidence section 6 [Environment Court document 3E].

equally unequivocal about the need to protect them, and they are not satisfactorily achieved by either structure plan in their July 2007 form.

4.33 Natural Environment (Chapter 8 of the City Plan)

Coastal environment

[575] Neither the Landco SP nor the NSCC SP fully achieves the objective[917] of protecting the coastal environment. Mr Mead in his final evidence for the NSCC partly conceded this when he lodged his amended plans[918] on 19 October 2007. That shows various buffers between the Long Bay Regional Park and any residential development.

[576] The Landco structure plan map shows various small setbacks from the adjacent Long Bay Regional Park. On the Awaruku Headland it also relied on the strip of land recently purchased from it by the ARC around the coastal scarp.

Ecosystems

[577] As for the ecosystem objective[919] we find that the Landco structure plan complies (at least theoretically) with the waterbody policy[920] by showing reserves in the lower Vaughans Stream and over its stormwater management ponds/wetlands provided that the Landco structure plan is amended to ensure earthworks do not take place in the stream bed or margins. However, neither structure plan implements fully the vegetation removal and earthworks policy[921] and the Landco structure plan does not implement the stormwater policy[922] because it does not require on-site absorption to be maximised. Further the Landco structure plan's reliance on reserves which may not be created makes us doubtful whether its proposals for protecting the natural resources in the catchments of streams 1C and 4 would prove effective.

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917 Objective 8.3.1.

918 Mr D W A Mead, fifth statement of evidence Annexures DM 5.1 and DM 5.2 [Environment Court document 3E].

919 NSCC Objective 8.3.2.

920 NSCC Policy 8.3.2(3).

921 NSCC Policy 8.3.2(6).

922 NSCC Policy 8.3.2(7).

Landscape, Landforms, Geological Features and Views

[578] We find that in their July 2007 forms neither structure plan implements these policies[923] adequately for the reasons discussed in Part 3.0 (Predictions) of this decision.

Stream protection

[579] We refer to the objective of stream protection and its 12 policies[924]. Policies 2, 3, 7, 8, 10 and 11 are partly implemented. We have previously found it highly likely that the Landco structure plan would reduce base flows in the upper mid reach and mid reach sections of the Vaughans main stem by approximately 30% and be approximately 50% greater than the corresponding NSCC structure plan effect. This would result primarily from development in the catchments of streams 9A - 9C as distinct from Catchment 3, which drains to the lower mid reach at Node 4[925]. To the extent that there is a correlation between water quantity and quality[926], we anticipate the NSCC structure plan would also perform better in quality terms. We find that in these areas the Landco structure plan is not the most appropriate way of achieving objective 8.3.5 [Stream Protection], policies 8.3.5(4) and (7), and possibly policy 8.3.2(7) [stormwater impacts on ecosystems]. In these regards the NSCC structure plan is a better alternative.

[580] We have also found that the NSCC structure plan, at least as implemented notionally in the Glenvar Slopes, is likely to have a lesser effect on the Vaughans Stream and its margins than the corresponding Landco structure plan proposal[927]. The latter requires virtually all of the land north of Glenvar Road extension to be either cut and/or filled resulting in 48% effective impervious cover and a 100% non-supporting/eliminated stream environment. More particularly, all of stream 9C and all of streams 9A and 9B except for their most northern sections are impacted. In places the preliminary Landco earthworks design shows fill, right up to the main stem above Node 9 - see attachment "A" to this decision for the location of the nodes - and in the vicinity of Node 8. In their closing submissions Landco's counsel indicated that an earthworks setback, as suggested by Dr Gardner to protect Vaughans Stream and

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923 NSCC Policies 8.3.3(4) and (5).
924 Objective 8.3.5.
925 Refer Exhibit DK 07.
926 Mr P R Cochrane, evidence-in-chief para 4.2 [Environment Court document 34].
921 Dr D Kettle, rebuttal evidence Figures DK-R4 and DK-R5 [Environment Court document 12].

riparian vegetation in the Glenvar area, would be "appropriate"[928]. Dr Gardner hoped that earthworks/geotechnical devices could be kept at least five metres clear of the drip line of main stem vegetation, including the margins, of small side streams, and that where this was not possible for engineering reasons, there would be some "compensation"[929]. However, in their present form Landco's proposals are not consistent with policy 8.3.5(2) [earthworks in proximity to waterways] and policy 8.3.5(6) [avoiding piping streams]. We also find that the NSCC structure plan would again better achieve objectives 8.3.2 and .5 in the stream 9A-C catchments.

[581] Probable differences in effects are less significant as between the structure plans in Catchment 3. Although there is a 23% variation in their effective impervious surfaces both structure plans propose very high levels of non-supporting and eliminated streams (100% and 78% respectively) and it is relevant. that significant lengths of stream in the catchment are already piped. Neither structure plan would retain any high quality stream lengths. Neither structure plan is likely to achieve the district plan's third tier stream based ecosystem and protection objectives.

[582] These last findings are rather tentative because none of the earthworks plans produced to us are final nor is it proposed they be part of any structure plan; they are simply possibilities. Further, if we appear to be more critical of the Landco structure plan that is in part because it gave us more information about possible earthworks necessary to achieve it. On the other hand, the NSCC's engineer Mr Heijs was concerned to keep earthworks clear of natural features and required changes to the NSCC structure plan to achieve that.

Stormwater control

[583] The objective and policies are[930]:

> To adopt a comprehensive approach to river and stream system management and avoid, remedy or mitigate stormwater contaminants and sediment discharge from land-based activities and to protect the integrity of flood plains.

928 Landco Closing Submissions 5 November 2007 para 5.99 p. 85 [Enviromnent Court document 87].
929 Transcript pp 1240-1242.
930 NSCC City Plan p. 8-16.

(Policies)

1. By considering stormwater management (including stormwater quality and quantity) as an integral component of overall site development or redevelopment.
2. By avoiding development in areas that are subject to a one-in-100 year flood for the fully urbanised catchment, and protecting the integrity of the 1% AEP flood plain.
3. By minimising contaminant levels entering waterways or water bodies.
4. By minimising run-off peaks as a result of stormwater disposal.
5. By encouraging stormwater management including biofiltration practices as a means of removing or reducing contaminants contained in stormwater run-off.
6. By encouraging native bush regeneration as a means of slowing and reducing run-off, preventing erosion and providing habitats for birds and aquatic fauna.
7. By clustering site development to protect natural areas, reduce total catchment imperviousness and to reduce the areal extent of imperviousness.
8. By requiring water quality treatment for stormwater run-off post development as well as during land development.
9. By ensuring that secondary/overland flow paths and open main drains are unobstructed by development.
10. By avoiding land disturbance and vegetation removal, particularly in sensitive catchments with high ecological value.
11. By ensuring that land use activities that have potential to produce significant stormwater contaminants control contaminant sources on-site through appropriate stormwater management measures.
12. By utilising an integrated set of land development controls, including density, imperviousness, parking and riparian controls, in order to limit the potential generation of urban run-off.
13. By encouraging and where necessary requiring the storage and detention of stormwater to limit the potential generation of urban run-off.
14. By encouraging the use of rainwater for non-potable uses to limit the potential generation of urban run-off.

In earlier parts of this decision we described the basic requirements of a comprehensive stormwater treatment train, and also the ambiguities in the Landco structure plan as to how extensive it proposed its treatment to be. We find that it is a necessary but not sufficient condition to comply with the stormwater policies that a comprehensive stormwater treatment train apply over all residential except highest density zones within the LBSP area. That would satisfy policies 3, 4, 5, 8, 11, 13 above and, to some extent, 12 for both structure plans. High-density residential and commercial zones would need

special conditions. We find that the Landco structure plan is inadequate in meeting policy 6. It also fails to a greater extent than the NSCC to implement policy 10 especially in respect of streams 1D and 9A.

4.34 Subdivision and Development (Chapter 9)

[584] Chapter 9 includes various objectives and policies about the design of subdivisions and the construction of lots within them. As we explained in Part 2 (The Law) of this decision the objectives of Chapter 9 need to be read down so that they do not conflict with higher order objectives. We referred to the implementing policies too in that part of the decision. We find that the NSCC structure plan better implements all the relevant environment policies[931] than the Landco structure plan, but it is the other way around (slightly) for the 'wellbeing, health and safety' policies in respect of[932] safe and stable building platforms at least on the Vaughans Slopes North.

4.35 Transportation (Chapter 12)

[585] We find that both structure plans generally implement the transportation objectives and policies in the City Plan.

4.36 Are any other objectives and policies relevant?

[586] We consider that all other Tier 3 objectives and policies are insufficiently relevant to take up further space. That is because Chapters 10, 13-16 all supply objectives and policies which are to apply (relevantly) <u>when</u> land has been rezoned under the structure plan process. Nor do we have to consider higher (Tier 2 and above) objectives and policies because we do not find sufficient inconsistencies and ambiguities in the Tier 3 objectives and policies to require us to go further back up the hierarchy of objectives and policies. That is rather helpful because it entails we do not have to enter the thicket of changes to the Tier 1 and Tier 2 objectives and policies represented by Plan Changes 2 and 12 to the City Plan.

931 Under objective 9.3.1 [NSCC District Plan p. 9-4].
932 Under objective 9.3.2 policy (1)(a) and (c) [NSCC District Plan p. 9-4].

4.4 The regional instruments and the NZCPS

4.41 Consistency with the ARPS

[587] Mr Bradbourne, for Landco, was of the opinion that the lower yield of dwellings for the NSCC structure plan was[933]:

> ... an under utilisation of land within the MUL. In my opinion this would be to a point where it would be inconsistent with the overall thrust of the ... ARPS to accommodate continued population growth within the MUL ...

While we agree that the overall thrust of the ARPS is to accommodate population growth within the MUL, we also bear in mind that the ARPS is vague about targets, leaving details for subsequent 'Sector Agreements'.

[588] Of relevance to North Shore City, more detail about its targets is given in the subordinate instrument called 'The NW Sector Agreement'. Under that agreement NSCC has to provide for around 9,000 new dwellings in the three structure plan areas - Albany, Greenhithe and Long Bay. Mr Mead produced a figure[934] showing that the NSCC has provided space for 10,800 additional dwellings in those areas, with an allowance for some 1,900 in Long Bay 2001 - 2021. However, in turn Mr Shearer produced a figure[935] entitled "NSC: Additional Dwelling Capacity 2021" which updates Mr Mead's rebuttal and shows Structure Plan Areas (2006) providing for a reduced percentage of future North Shore dwellings. More particularly, the 25% allocated to structure plan areas in Mr Mead's Figure 4 is reduced to either 10% or 7.5% depending on how intensification occurs. We find that centres and intensification may well have to accommodate a larger share of future growth as Mr Shearer suggests and that available greenfields on the North Shore may well be being taken up at a faster rate than the authors of the NW Sector Agreement anticipated[936]. Neither of those matters derogate from our finding that, given the capacity provided by NSCC in its three structure plan areas, the NSCC Long Bay structure plan is not, overall, inconsistent with

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933 Mr A A Bradbourne, evidence-in-chief para 4.11 [Environment Court document 80].

934 Mr D W A Mead, rebuttal evidence paragraphs 6.14 to 6.17 and Table 9 [Environment Court document 3B].

935 Transcript p. 1866 line 39 [Exhibit 78.1].

936 Mr Galbraith QC's cross-examination of Mr D W A Mead, transcript p. 120-121.

the RPS, and in many ways it is more consistent with the RPS than the Landco structure plan.

4.42 Proposed changes to the Regional Policy Statement

[589] In considering the structure plan maps we must have regard to the proposed changes to several regional instruments. First we consider the changes to the Auckland RPS. We read a large quantity of evidence and heard considerable cross-examination on the priorities in the proposed RPS (and what changes are made by Change 6). While it is obviously important to the Auckland region under Change 6 that more dwellings are built - and in a way that integrates with transport systems - Change 6 does not make that goal more important than other environmental issues. To the contrary, strategic policy 2.6.5.8's emphasis on maximising the efficient use of land for housing is expressly[937] "... subject to consideration of environmental and infrastructural issues".

[590] As for Change 8 to the RPS that gives considerable strength to the protection of the landscape at the eastern side of the Long Bay structure plan area. The first relevant policy in Change 8 simply states (relevantly):

> ONLs located in the coastal environment or near wetlands ... rivers and their margins shall be protected by:
>
> (i) avoiding subdivision and the introduction of built structures.

Given its proposed place in the RPS, that policy is not absolute (none are) but it is certainly strongly worded. In a statutory document which carefully qualifies a large proportion of its policies that is an unusually blunt and unequivocal statement in the proposed RPS. To the extent that the Landco SP proposes development in that part of the ONL which is contained in the LBSP area (i.e. north of Vaughans Stream) it does not implement it. However the NSCC structure plan does, if amended as Mr Mead suggested in his final evidence[938].

[591] Other important policies in Change 8 are policies 6.4.22(5) and (6) because these concern respectively management of areas that have 'physical or visual connections to

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931 ARC RPS change 6 policy 2.6.5.8.

938 Mr D W A Mead, fifth statement [Environment Court document 3E].

ONLs', and a series of criteria for determining that issue. The first criterion[939] is whether there are important public views to an ONL from adjacent areas. We have considered whether the views of the Hauraki Gulf/Long Bay ONL from Vaughans and Beach Roads are important but find they are not on the evidence before us[940]. The second is[941] whether there is important public access to the ONL but that is not affected here. The third[942] is whether there are significant landforms and/or vegetation that physically connects the ONL with adjacent areas. That criterion is important here: the Piripiri Point Ridge, Grannie's Ridge and Homestead Spur are all very obvious features connecting the northern part of the LBSP area with the ONL; Vaughans Stream and its tributaries connect with the ONL through the estuary and mouth of the river. There are also the patches of significant vegetation which loosely connect the ONL with the largely bushed headwaters (outside the LBSPA) of Vaughans Stream.

[592] We find that neither the NSCC structure plan nor the Landco structure plan implements policy 6.4.22(5). The quality of the ONL up Homestead Spur, on the northern side of Grannie's Ridge, and along the seaward side of Piripiri Point Ridge will be adversely affected by residential development on it or adjacent to it in a way that we find inappropriate under both plans given their importance locally, regionally and nationally.

4.43 The Proposed Auckland Regional Plan: Air, Land, Water

[593] Most relevant is policy 2.1.4.1 of the PARP: ALW which seeks to 'avoid remedy or mitigate adverse effects of inappropriate use and development of wetlands and rivers'. Vaughans Stream is a 'river' within the meaning of the policy. That policy is not directly helpful but in combination with the matters listed in its policy 2.1.4.8 the proposed regional plan gives some guidance as to what is perceived as inappropriate - as a negative response to the relevant matters to be maintained and enhanced since the latter policy 2.1.4.8 refers to many of the matters discussed in Parts 1.0 (Facts) and 3.0 (Predictions) of this decision.

939 PRPS Change 8 policy 6.4.22(6)(i).
940 See for example Mr P Rough, photographs P.5 [Environment Court document 28B].
941 PRPS Change 8 policy 6.4.22(6)(ii).
942 PRPS Change 8 policy 6.4.22(6)(iii).

4.44 The New Zealand Coastal Policy Statement

[594] Recalling that all of the landscape experts agreed that the entire Long Bay catchment and structure plan area is within the coastal environment we find, in the light of the predictions in Part 3 of this decision, that neither structure plan adequately gives effect to the NZCPS. Particular aspects of concern include:

- protecting the natural landscape and features of the Hauraki Gulf/Long Bay ONL and the Regional Park (NZCPS Policy 1.1.3(a));
- protecting the significant historic and cultural places and areas on the Awaruku headland and ridge (NZCPS Policy 1.1.3(b) and (c));
- protecting the areas of significant indigenous vegetation around parts of streams 1C, 4 and 9A (NZCPS Policy 1.1.2);
- protecting the water quality and habitat of the Vaughans Stream catchment (NZCPS Policy 1-1.2); and
- the need to adopt a precautionary approach to protecting the ecological values of the marine reserve particularly from increased sedimentation during earthworks (NZCPS Policies 1.1.4 and 3.3.1).

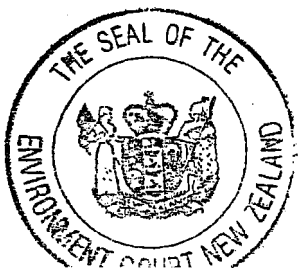
We find that the degree and quantity of adverse effects of the structure plans makes them inappropriate as they stand.

[595] Although we consider that the NSCC SP better gives effect to the NZCPS than does the Landco SP, we consider that further changes to the NSCC plan change are required to provide for appropriate subdivision, use and development in this coastal environment. These changes are detailed in Part 5.0 of this decision.

4.5 Section 32 of the RMA

4.51 Introduction

[596] When considering the matters under section 32 of the RMA we must examine the efficiency and effectiveness of each structure plan's policies and rules to see which are the most appropriate for achieving the design principles in Chapter 17 and any applicable higher tier objectives in the District Plan. The likely effectiveness of the provisions of the proposed structure plans is examined throughout this and the next part



of this decision. Their efficiency was the subject of specific, sometimes technical, evidence which we now examine. Evaluation of the proposed structure plans takes into account their benefits and costs[943]. We were not given anything like a quantitative benefit/cost analysis in these proceedings. The NSCC, ARC and section 274 parties (other than the Ngati Whatua Trust) all relied on a qualitative analysis through their planners.

4.52 Yield and efficiency

[597] For its part, Landco made much of its predictions of reduced housing yield if its structure plan was not accepted. Its witnesses said that if the NSCC structure plan was accepted there would, be room for 1,000 fewer dwellings in the LBSP area. Mr Bradbourne's first main chapter of his evidence-in-chief discusses 'land use efficiency'. He never states what he means by efficiency but it seems clear from the contexts that he is talking about the number of residences that can be fitted into the LBSPA, i.e. yield. He states that the likely difference in dwellings under the structure plans is 1,500 and that[944] "highlights the fact that the NSCC SP will bring about an under-utilisation of land within the MUL". He then analyses various statutory instruments for references to efficiency. The most important of those is the objective for the Residential Expansion Zone in Chapter 17 which seeks to "... enable ... the efficient use of natural and physical resources"[945].

[598] There are difficulties with Mr Bradbourne's approach. First, if we apply the definition of efficiency as 'environmental efficiency' discussed earlier, then what Mr Bradbourne is referring to is the use of the land in the LBSP area for the activities for which society values it most. Both in Chapter 17 of the City Plan and in the RMA, those values are much wider than maximising the number of dwellings. Secondly, while it <u>is</u> meaningful to talk about the efficiency of use of one resource (as Dr Hazeldine, the economist for NSCC, observed), a judgment still has to be made comparing the efficient use of one or more resources with the efficient use of the others relevant to the proceeding. Mr Bradbourne has not performed that task. Thirdly, as Mr

943 Section 32(4)(a) of the RMA.
944 Mr A A Bradbourne, evidence-in-chief para 4.11 [Environment Court document 80].
945 Objective 17.4.1.

Lunday pointed out, there are other ways of solving that problem if yield is the principal value sought to be protected (which clearly it is not).

[599] Fourthly, there are difficulties with any general surrogate for money when assessing value in quantitative terms. To use analysis of 'housing yield' - or in other cases, of 'carbon footprints' - is far too crude. For a start, the former gives only an approximate measure of gross benefits and the latter, an assumption-laden measure of gross cost. There are other difficulties too. As Professor Hazeldine wrote[946] under the heading 'Efficiency is not yield':

> First, though, I need to clear up a confusion that has crept into the case. There is some tendency in submissions on both sides to equate the term 'efficiency' to 'maximum yield', meaning housing as many people as possible on a given site.
>
> In my opinion this is not a valid use of the term. Maximising 'yield' would lead to building huge tower blocks, or perhaps back-to-back tenements with no gardens. Clearly, this is not very useful - we must be in a world of trade-offs, in which yield or density is balanced against other considerations.

We agree with that evidence, and apply it throughout these proceedings.

[600] Several other difficulties with the Landco approach to section 32 were highlighted by the open-endedness of Mr Tansley's concluding statement[947]:

> I consider that it is highly significant that no witness for the Council has referred the Court to the Plan's operative, unchanged provisions, for contextual background.
>
> Otherwise, for the reasons that I have outlined, I further consider that any fully informed s32 process would have identified the mutual benefits of a more intensive residential development and a more comprehensive commercial centre as the most appropriate, in relation to both the Plan's operative provisions and the higher order modification provisions, relative to any alternative strategy. **This is, of course, from a social and economic perspective, leaving other considerations to be weighed.**

946 Dr T Hazeldine, rebuttal evidence para 4.4 *et ff* [Environment Court document 20].
947 Mr M G Tansley, evidence-in-chief para 10.2.0 [Environment Court document 25].

> In my view, the social and economic considerations associated with [Variation] 66 are material and important matters. From that viewpoint., I strongly support the Landco SP, and any consequential. adjustments to it that may be appropriate.
> [Emphasis added]

There are a number of difficulties with that passage. First we consider Mr Tansley is probably trespassing beyond his expertise. He describes himself as a 'retail consultant', not as a planner and not as an economist. Second he has looked at higher order (i.e. Tier 1 or Tier 2) objectives and policies in the City Plan which are neither settled nor relevant. Third he has been selective with the lower order objectives and policies he has referred to. Fourth, witnesses such as Mr Mead for the NSCC have looked fairly comprehensively at the relevant objectives and policies in the City Plan - especially the principles in Chapter 17. Lastly Mr Tansley's economic perspective is limited because it only considers some resources not others. A fair and comprehensive economic analysis has not been attempted.

[601] Mr Tansley also considered[948] that under the LSP a supermarket would be "... an irresistible and ... low-risk enterprise ... " whereas under the NSCC SP the number of households in the LBSP area at maturity (i.e. by 2021 when it is anticipated all houses would be built) would fail to generate sufficient spending to support a supermarket. Since there was no evidence to the contrary we accept that evidence (with doubts) and find that the Landco structure plan might provide a benefit that the NSCC structure plan is much less likely to provide.

4.53 Comparison of options in fill

[602] Dr Hazeldine made a very interesting point that is often overlooked[949]:

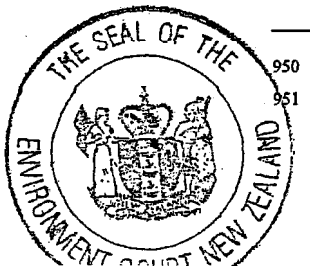
> There is a problem with many of the expert submissions presented to the Court in this case. In comparing two options, these options must be compared *in full.* What this means in particular is that it is not valid to simply compare, say, the 'urban form' of Long Bay under each structure plan and arrive at an evaluation of which is more desirable on its merits. In addition to this, we must also consider the implications of the two options for urban form *elsewhere.*

948 Mr M G Tansley, evidence-in-chief para 5.5.8. [Environment Court document 25].
949 Dr T Hazeldine, rebuttal evidence paragraphs 4.10-4.11 [Environment Court document 20].

> Specifically, in this case, where we have the proposals differing in the number of dwellings to be developed in Long Bay, we need to ask what would happen to development elsewhere if the additional dwellings proposed by Landco were not [to] be sited in Long Bay. This could be a quite difficult exercise, but it is made much less so in the present context by the existence of the Regional Policy Statement under which the North Shore City Council has signed its (2001) 'Northern and Western Sector Agreement'[950] which commits it to a plan for accommodating growth in the demand for housing in the city. Specifically, this plan incorporates a commitment to make provision for around 9000 new dwellings in three 'greenfields' sites: Long Bay, Albany and Greenhithe. The relevance of this commitment to the present case is that it can be taken that if the additional dwellings proposed by Landco for Long Bay are not approved, then the additional dwellings are instead most likely to be accommodated in the Albany and Greenhithe structure plan areas, through general infill, and increasingly over time, as the North Shore District Plan is changed to give effect to the Regional Policy Statement's objectives to accommodate most growth around existing centres, centres like Takapuna, Milford and Browns Bay.

We have carefully re-read the cross-examination of Dr Hazeldine by Mr Galbraith QC on that evidence, and we continue to find it unshaken on the key points, so we accept it, with one qualification. We have quoted the full passage to give the context. We do not necessarily agree with the last sentence. Houses in Long Bay are not in the same market as the other areas of North Shore City mentioned by Dr Hazeldine. Indeed he seems to realise that elsewhere in his evidence in a passage where he acknowledges the potential differentiating characteristics of residential development in the LBSPA. People who cannot buy in the coastal environment of Long Bay may move out of the City altogether. However, that should not obscure the importance of his general point, that options must be compared in full.

[603] On that basis Dr Hazeldine concluded that the evidence of Mr J T Baines, a social assessment specialist called by Landco, was incomplete. After the passage just quoted Dr Hazeldine continued[951]:



950 Mr D W A Mead, rebuttal evidence par 6.13 [Environment Court document 3].
951 Dr T Hazeldine, rebuttal evidence paragraph 4.15 *et ff* [Environment Court document 20].

> Thus, for example, Mr Baines in his submission on 'social well-being' compares only the Landco and NSCC proposals in the context of Long Bay itself. But, whatever the merits or otherwise of the points he makes, this, unfortunately, is not the comparison he should be making. He should be comparing Landco's SP with the NSCC SP *plus the effects on the other sites where the additional Landco dwellings would be located* ... Mr Baines has not carried out this comparison [so] we can't know what the outcome of it would be, but it seems to me reasonable to note two points:
>
> (a) Adding the thousand or so additional dwellings that are at issue here to the other sites would quite likely add to the ability of those developments and neighbourhoods to generate social amenities of the sort he discusses only in the Long Bay context.
> (b) The much different and less intensive development of Long Bay under the NSCC SP would quite likely attract residents to whom what to others would be disadvantages - far away location, lack of a large shopping centre, not many neighbours - would actually be just what they are looking for. Then the other sites, in their more urban locations, can satisfy the needs of those who prefer a denser, better serviced, more urban neighbourhood experience.

We accept Dr Hazeldine's fundamental point - that Mr Baines has not carried out the necessary comparison - as fair criticism of Mr Baines' evidence.

[604] Finally we accept Dr Hazeldine's conclusion on the relative environmental efficiency of the two sets of structure plan maps[952]:

> There has been much argument and debate in this case about, in particular, whether the more intensive Landco proposal would bring harmful environmental effects and whether steps in mitigation of these would be effective. These are important issues, but, again, from the overall efficiency perspective that I have been urging in this section, the debate may be misdirected.
>
> The appropriate question is whether the additional environmental damage and/or the additional costs in mitigation associated with Landco SP would be greater or less than the environmental damage and/or mitigating costs entailed by shifting those thousand additional dwellings to the two other greenfields sites within North Shore City (and/or existing urban centres).

952 Dr T Hazeldine, rebuttal evidence paragraph 4.21 *et ff* [Environment Court document 20].

4.54 Conclusions

[605] We were disappointed that in such a major case there was no attempt by any party to quantify and then compare the actual net benefits from the current rural use of (at least) the Landco-owned eastern part of the LBSP area with the possible net benefits of each of the proposed structure plans. The lack of a full and proper comparison of the net benefits from the different options is especially important for Landco's position because its case was that significant changes could not be made to the Landco SP without having fundamental repercussions for the viability or 'feasibility' of its proposal. We have no objective basis on which to make the assessment.

[606] We conclude that the question of which structure plan is more efficient and effective is, on the evidence before us, a very subjective question which has to be decided almost entirely on how well the structure plans respectively pass the other statutory tests.

4.6 Part 2 of the Act

4.61 Introduction: enabling wellbeing

[607] In relation to Part 2 of the Act counsel for Landco wrote in their final submissions:

> Broadly speaking what distinguishes the balancing process carried out by all other parties from that undertaken by Landco is that the other parties essentially failed to investigate, understand or appropriately take social considerations into account

There followed 35 pages of submissions on that issue under these subheadings:

(a) The importance of social values at Long Bay in the context of Part 2;
(b) The importance of careful urban design to understanding and achieving social objectives and to the Part 2 balancing process;
(c) the importance of the village centre to achieving the social objectives and to the Part 2 balancing exercise;
(d) comparative urban form and social effects of the Landco SP and NSCC SP proposals;
(e) Failure by the NSCC to weigh social implications of its proposal warrants extreme caution.

4.62 Social effects of developing the LBSPA

[608] Counsel for Landco submitted that the social effects of development at Long Bay are an important consideration to be weighed, and that that importance is found in:

> (a) The current zoning of the land ...;
> (b) The general direction to use land efficiently;
> (c) The significant growth pressure in the Auckland region, and the regulatory instruments which identify Long Bay as an integral part of the solution;
> (d) The regional and district imperatives to improve the quality of living for the residents of Auckland (including objectives notified in this SP process).

We consider point (a) is nearly meaningless. The objective[953] of the current zoning is stated in Chapter 17 as being to enable the extension of the urban area in a manner that responds to the environmental constraints and opportunities and enables efficient use of the land. There is no express mention of 'social value'; and to the extent that 'social wellbeing' is one component of the purpose of the Act, the 'environmental opportunities and constraints' mentioned in the objective are directed by the Act's sections 6 to 8 to be components of that wellbeing. Point (b): Landco's reference to 'efficiency' repeats the wording of the Chapter 17 objective but without stating what is meant by efficiency in these circumstances so it too is meaningless without elaboration. The statutory instruments referred to in submission (c) have been discussed already, although the weight to be given them is an issue still to be determined. As for (d) - the imperatives to improve the quality of living for the residents in Auckland - this perpetuates the error inherent in so much of the argument and evidence for Landco that the quality of social wellbeing is somehow opposed by, rather than as Parliament has directed, contributed to by the section 5(2)(a) and (b) and sections 6 to 8 matters.

[609] Rather surprisingly, counsel for Landco submitted that somehow the social values of the Long Bay structure plans are of regional importance to satisfy the 'growth concept' because as the ARGS states[954]:

953 Objective 17.4.1.
954 ARGS p. 49.

> The Growth Concept avoids development of the most highly valued and sensitive catchments and coastal environments, and highly valued rural areas, landscapes, bush, habitats and public open space, while protecting or enhancing environmental values in already urbanised areas.

We do not see any direct reference to any 'social values' there, although we appreciate that under sections 5(2)(c), 6, 7 and 8 of the RMA the avoidance of development in parts of the Long Bay structure plan area will contribute greatly to enabling social wellbeing. That is not the point Landco appeared to be making. Indeed we have already observed that Landco's interpretation of the Act denies the case of the Long Bay Society that those matters contribute to their wellbeing and that of future residents of the LBSPA.

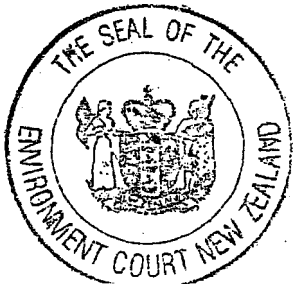
4.63 Importance of urban design

[610] Counsel for Landco submitted that[955]:

> Proceeding from the foundation that social effects are an important consideration in the Part 2 assessment [the Court should] address the importance of careful urban design as the basis for understanding, and therefore taking into account, the likely social effects of a proposal to use or develop land.
>
> Virtually every development proposal gives rise to potential conflict between the proposed "use and development" of a resource and natural values associated with that resource. It is an inherent requirement of Part 2 that this conflict must be resolved in a manner which both enables people and communities to provide for their well-being, health and safety, as well as protecting natural values.

That passage repeats the mistake we identified in Part 2.0 (the law) when discussing Part 2 of the Act - that is to assume that section 6 to 8 values are 'natural' values which must be opposed to social wellbeing. To the contrary we have held that except for section 7(d) and, possibly, section 6(c) all of the values in sections 6 to 8 are contributors towards social wellbeing, i.e. they are social values.

[611] Counsel for Landco then embarked on a comparative analysis of NSCC's proposed Chapters 9A and 17B with Landco's version as a justification for Landco's structure plan map and strategy in preference to those of the NSCC. We have already



955 Landco's closing submissions paras 4.43 and 4.44 [Environment Court document 87].

held and confirm that is putting the cart before the horse. The new Chapters 9A and 17B objectives and policies must flow from the new structure plan map and strategy (description) not direct it.

[612] Landco is critical[956] of the 'complete failure' of the NSCC to undertake an 'urban design' process. That is an unfair and misconceived criticism since Chapter 17 of the City Plan does not require an 'urban design process'. Rather it outlines a structure plan process and we find that the NSCC has adequately followed that. In fact, the criticism can be reversed: it is the Landco structure plan process which does not follow the steps set out in the design principles. In particular Landco has resisted the direction[957] that it should use the results of landscape and ecological surveys to determine the carrying capacity of the land in order to manage '... the impact of human activity in the area'. While Landco had received[958] ecological, archaeological, geological, stormwater, planning and earthworks reports before it prepared a structure plan, there was no landscape report at that stage. We gain the impression that the first and all subsequent iterations have been driven by earthworks plans to a greater extent than they should have.

4.64 Importance of the village centre

[613] Landco's counsel submitted that[959] the NSCC structure plan has no regard to the social consequences of the scale of the village centre. In contrast, the Landco case is that[960]:

> The village centre capacity designed into the Landco SP is based on Mr Egerton's experiences of developments which have succeeded or failed depending on the scale and mix of the town centre. He regards this as a critical aspect of masterplan design.

956 Landco's final submissions para 4.52 [Environment Court document 87].
957 Design Principle 17.5.6(7).
958 Landco's final submissions para 4.54 [Environment Court document 87].
959 Landco's final submissions para 4.69 [Environment Court document 87].
960 Landco's final submissions para 4.70 [Environment Court document 87] referring to Mr P H Egerton, first statement of evidence paragraphs 6.237 - 2.240 [Environment Court document 23].

Mr Egerton's suggestions of village capacity were supported by the expert testimony of Mr Baines (sociologist), and Mr Tansley (retail supply and demand). Counsel for Landco submitted[961]:

> It is clear from the evidence of these three witnesses that the size and make up of a village centre will have an important influence on whether:
>
> (a) Compact urban form is likely to occur on the city fringe.
>
> (i) Messrs Egerton and Baines expressed the clear view that the success of this type of accommodation (both getting the developer to build it and getting people to occupy it) is closely linked to the nature of the goods and services available;[962]
>
> (ii) They also identify the existence of an anchor tenant with the power to attract the range of necessary ancillary shops as being an essential requirement;[963]
>
> (iii) Mr Tansley gave evidence that the anchor tenancy would need to be a supermarket of no less than 2500 m^2 fIoor area.[964]
>
> (b) The village centre will provide a level of goods and services to attract a critical mass of households (whether attached or detached) necessary to support the centre.
>
> (c) Mr Tansley identified a very comfortable number of households as 2975, and the cut-off point for viability at around 2505 households.[965]
>
> (d) A village centre will act as a sustainable community focal point[966], and thus achieve the common objective of both proposals to create a 'sense of community'.[967]

[614] In contrast the capacity of the village centre in the NSCC structure plan is not assessed - according to the Landco case. Its counsel submitted that[968]:

> This gross failure by the NSCC to attempt to understand and address the social implications of its village centre is in Landco's submission, another example of the NSCC's lack of concern with social considerations and its preoccupation with matters pertaining to the natural environment.

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961 Landco's final submissions para 4.72 [Environment Court document 87].
962 Mr P H Egerton, first statement of evidence paragraphs 5.90 - 5.93; and Mr J T Baines, evidence-in-chief paragraphs 9.38 - 9.39 [Environment Court document 26].
963 Mr P H Egerton, first statement of evidence para 6.240; and Mr J T Baines, evidence-in-chief para 10.2 [Environment Court document 26].
964 Mr M G C Tansley, evidence-in-chief paragraphs 2.3.3, 5.5.2 and 5.5.3 [Environment Court document 25].
965 Mr M G C Tansley, evidence-in-chief paragraphs 5.5.6 - 5.5.7 [Environment Court document 25].
966 Mr P H Egerton, first statement of evidence para 6.245 [Environment Court document 23].
967 Objective 9A3.5 of both structure plans.
968 Landco's final submissions para 4.77 [Environment Court document 87].

We consider that the NSCC structure plan (as amended) goes as far as it needs to in enabling the present and future residents of the area and any new community to provide for their future wellbeing, health and safety and generally achieves Design Principle 17.5.5.3(ii).

4.65 Feasibility of delivery

[615] Mr G M Olliver, the Chief Executive Officer of Landco, in his evidence[969] and Mr P G Egerton[970] were both concerned about the 'balance' of the Landco SP being upset by any changes, because there would be a ripple effect throughout their concept. Mr Egerton identified some of the potential effects as being a failure to attract higher density development, an unwillingness to construct roads through Glenvar or up Vaughans Slopes (North), and consequent development of stand-alone houses on Awaruku Ridge. Other potential effects identified in the evidence were an earthworking surplus or deficit so that fill would have to be trucked across Vaughans Stream or even out or into the LBSPA at great cost and inconvenience.

[616] While we understand Landco's concerns, it could have called full evidence as to all the existing benefits and costs including current land value for existing pastoral uses as against prospective benefits and costs. It is important that any decision as to feasibility is based on objective evidence as to value. We should not rely on assertions about projected yield and costs which rely on the (undisclosed) price a development company speculated its land was worth. Without meaningful economic evidence - see *Memon and Ors v Christchurch City Council*[971] for a case where that was provided properly - we simply do not have enough information on which to make a quantitative decision about Mr Olliver's and Mr Egerton's claim. Mr Egerton's 'ground truthing'[972] - to establish that a structure plan can deliver on the ground what it promises on paper - is a very poor substitute for robust economic analysis.

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969 G M Olliver, evidence-in-chief para 3.2 [Environment Court document 22].
970 Mr P H Egerton, evidence-in-chief, para 5.93 [Environment Court document 23A].
971 Decision C116/03.
972 As Mr Olliver described it: Mr G M Olliver, evidence-in-chief para 7.4(1) [Environment Court document 22].

4.66 Environmental compensation: illegal taking or legal benefit?

The evidence and submissions

[617] Mr Bradbourne wrote[973]:

> Mr Nugent touches upon the issue of public acquisition of reserve areas[974] ... when referring in particular to the heritage protection area. To my mind this question also needs to be addressed in relation to all of the proposed buffer areas. Bearing in mind section 185(2) RM Act I consider that the ARC proposal for extension of the buffer areas beyond those already provided by Landco in its proposal would be unfair to Landco, and should, if the need can be established, be the subject of a requirement to designate. In particular it is my opinion that:
>
> - The proposal (to establish buffers) clearly has the potential to preclude development of private land in order to bring a claimed benefit to the public;
> - As a matter of principle benefits of this nature should be paid for from public funds, not by individual land holders;
> - The appropriate, and transparent, technique (if the need is established) would be for these areas to be designated as Regional Park and acquired by the ARC. After all this was the approach taken by the ARC in 2001 which resulted in the purchase of the areas shown on Mr Olsen's Annexure No. 5;
> - That the public authorities chose not to seek to acquire this land when deciding how best to protect the park must presumably relate to their perception of the extent of the benefits, and the cost of attaining those benefits;
> - If the benefits do not warrant the cost being met by a public authority, it is difficult to see how that same cost can effectively be transferred to the private landholder; and
> - Indeed, even if the cost was warranted, but public funding was not available, that is no justification for casting the obligation of providing a public benefit on a private landholder.

The NSCC and the ARC both designated land in the area 'North Shore City Park' and 'Regional Park' respectively in 2001 or 2002. The City Council acquired 38.4749 ha at the northern end of the LBSPA. The reasons for this designation as contained in the Notice of Requirement[975] summary were:

> ... to increase the amount of public open space in response to population growth, provide a rural coastal experience, preserve a large area of rural coastal land next to a sensitive marine

973 Mr A A Bradbourne, rebuttal evidence para 4.29 *et ff* [Environment Court document 80A].
974 Mr T D Nugent, evidence-in-chief para 4.16 [Environment Court document 82].
975 Quoted by Mr A A Bradbourne, rebuttal evidence para 5.5 [Environment Court document 80A].

> environment, and linking the regional park with North Shore City's proposed 'crimson walkway' along the edge of the Okura River.

[618] For its part the ARC later acquired three areas in the central and southern parts of the Regional Park having a total area of 5.8887 ha. The reasons for the ARC designations were stated in the Notice of Requirement summary as being:

> ... These areas of land have been chosen to help minimise the visual impact of future development nearby, enhance the experience of park visitors and enhance the rural coastal character of the area.

The ARC's extensions to the Regional Park abut the buffer areas suggested by witnesses such as Mr Scott, Mr Olsen, Mr Nugent and Mr Mead for the Awaruku Ridge. Mr Brown confirmed in his rebuttal evidence that between them the NSCC and the ARC have spent $32 million on acquiring those parcels of land.

[619] In their closing submissions Landco's counsel expanded on the themes raised by Mr Bradbourne[976]:

> ... that the Court should be slow to seek the sterilisation of significant areas of land within the SPA by the imposition of large additional buffer areas. This is particularly so when both councils have already acquired land for such "buffer" purposes, and buffers of the extent proposed by some witnesses would:
>
> (a) Have significant adverse impacts on the urban design and liveability of the Long Bay SPA and on the yield able to be generated[977] (an important issue when it is apparent that the witnesses proposing large-scale buffers seem to have done so in isolation and have not given consideration to the effects that their proposed buffers would have on the other aspects of the structure plans);
>
> (b) In particular, a reduction in yield (below around 2,505 dwellings[978]) may limit the opportunity to establish a supermarket in the Village Centre and for the SPA to therefore achieve the benefits that would flow from a vibrant and efficient Village Centre;
>
> (c) Favour existing residents in the vicinity, and existing users of the Regional Park, ahead of the needs of future residents of the SPA;

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976 Landco final submissions paras 7.21 and 7.22 [Environment Court document 87].
977 Mr M Williams, Fourth Statement of Evidence section 2 [Environment Court document 30].
978 Mr M G C Tansley, evidence-in-chief para 5.57 [Environment Court document 25].

(d) Unfairly and unreasonably impose significant costs on the property owner without appropriate compensation as a "quasi-taking" of the land for public purposes[979];

(e) Have an uncertain (i.e. unquantifiable) effect in terms of "cushioning" the impact of urbanisation on the Regional Park at Long Bay.

> The Court has had the benefit of a site visit. The cumulative impact of the variously proposed controls is bought forcibly home in Landco's submission when one visits the SPA and see the swathes of private land sought to be sterilised as visual, landscape, heritage or Regional Park "buffers".

Consideration

[620] We accept that in fact protection of the outstanding and/or amenity landscapes, historic heritage, and significant habitats will restrict the use that can be made of land by owners within the structure plan area. Further, it is a general legal principle under the RMA that private land should not be zoned for reserve purposes unless the landowner agrees or the land is unsuitable for development: see *Capital Coast Health Limited v Wellington City Council*[980]. But in that case the Environment Court qualified that principle when it accepted the agreed statement of counsel that[981]:

> However this general principle is always subject to the provisions in Part II of the Act. Where particular land has such significance in terms of any of the factors listed in s.6 and s.7 of the Resource Management Act 1991 that its use or development ought to be substantially limited or precluded, then land use controls which may have that effect may be appropriate regardless of the ownership of that land (but subject to s.32 and s.85).

[621] Mr Galbraith referred to the principle that private land should not be used to create a public reserve. He referred to *Murray v Whakatane District Council*[982] *as* authority for that proposition. The Environment Court concluded in that case that the opposing parties:

> Are not entitled to expect a land owner with valuable private land zoned Residential A to curtail legitimate activities and form a private reserve.

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979 Mr G Olliver, rebuttal evidence section 5 [Environment Court document 22].
980 Environment Court, 19 January 2000, W4/2000 at para 7.
981 Environment Court, 19 January 2000, W4/2000 at para 7.
982 Environment Court, A176/2002.

That case can be distinguished. The Long Bay land is not zoned residential and the permitted activities on the land are, at present, rural.

[622] In any event, as Ms Campbell submitted, *Murray* needs to be read subject to the Supreme Court's more recent decision in *Waitakere City Council v Estate Homes Limited*[983]. There the Supreme Court considered whether a condition of a subdivision consent requiring that land needed for an arterial road be vested with the Council amounted to a taking of land. The Court held that there was no taking, endorsing the High Court of Australia's comment in *Lloyd v Robinson*[984] that:

> … the landowner must decide for himself whether the right to subdivide will be bought too dearly at the price of complying with the conditions.

The same general principle applies here. Landco's land is not being taken. Instead the company wishes to obtain residential zoning for its land. If it elects to use that zoning rather than rely on existing use rights to continue farming it must accept the appropriate conditions in zone rules or resource consent conditions in return.

[623] In this case various areas have been identified as 'conservation areas', 'ecological/stonnwater areas' or 'enhancement areas'. The proposed buffers could fit into one of those areas. Generally those 'environmental compensation areas' are all areas which may need, for restoration or protection or enhancement purposes, to be excluded from full urban development. It is important to recognise that the environmental compensation areas are, unlike proposed roads or reserves, not areas for proposed financial contributions[985] by the landowners. They are areas required by Part 2 of the Act (and by various subordinate provisions we have identified in the NZCPS and the City Plan) as environmental compensation to remedy, mitigate, or enhance various features of the Long Bay environment.

[624] As for the suggestion there is a quasi-taking we cannot accept that. The issue of 'de facto' taking has arisen frequently in the European Union. For example, we refer to

983 (Supreme Court) [2006] NZSC 112, [2007] NZRMA 137.
984 (1962) 107 CLR 142 at 154.
985 Section 108(10) of the RMA.

the decision of the European Court of Human Rights in *Pine Valley Developments Limited v Ireland*[986]*:*

> There was no formal expropriation of the property in question. [N]either in the Court's view, can it be said that there was a de facto deprivation. The impugned measure was basically designed to ensure that the land was used in conformity with the relevant planning laws and title remained vested in [the owner], whose powers to take decisions concerning the property were unaffected. Again, the land was not left without any meaningful alternative use, for it could have been farmed or leased. Finally, although the value of the site, was substantially reduced, it was not rendered worthless, as is evidenced by the fact that it was subsequently sold in the open market ...

All the points made there could equally be applied to Landco and its land within the LBSPA.

[625] We hold that the submission that the land in any buffer is sterilised is wrong because the whole point of the buffers is to protect and enhance the naturalness of both the buffer and the adjacent land outside the LBSP area. It is ironic that counsel for Landco have chosen the term 'sterilise' - obviously meaning it in the figurative sense of 'render unproductive, unprofitable, or useless'[987]. In fact the literal meaning of sterile is 'to destroy the fertility of'[988] and in a sense that is what the opponents of the Landco SP are concerned with. Far from such buffers being 'sterilised' they are being enhanced or enriched from the perspective of one or more of the matters of national importance in section 6 and of the people who may eventually live in the structure plan area as well as those who live and visit in the Long Bay area at present or who may in the future. The more specific submission that the buffers will reduce the yield of residences overall may well be true - we discuss that later.

[626] Landco generally criticised the witnesses proposing the large-scale buffers for not considering the effects that the buffers would have on other aspects of the structure plans. But that is not the correct legal test. It is not merely the effects on the proposed

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986 (1992) ECHR Reports, Series A, No. 222 at para 56; 3 International Environment Law Reports, 570 at p. 574.

987 The Shorter Oxford English Dictionary p. 2123 (meaning 4) [OUP, 3rd Edition 1985 revision].

988 The Shorter Oxford English Dictionary p. 2123 (meaning 4) [OUP, 3rd Edition 1985 revision].

structure plans that has to be evaluated, but the effects on the management of the LBSPA under Chapter 17 of the District Plan and Part 2 of the Act. That test was not well met by Landco's own witnesses - Mr Egerton barely referred to the design principles in Chapter 17 of the District Plan or any higher objectives. In relation to Part 2 of the Act Mr Bradbourne compares the structure plans in an incorrect way. He does not set out to compare the two strategies and the related maps, but rather the subordinate implementing, objectives and policies in proposed Chapters 9A and 17B. Inconsistently, once he tries to compare objectives in detail he leaves them and gives new descriptions from the evidence (not from the objectives and policies). For example, in the context of 'enabling ... wellbeing'[989] he catalogues the advantages of the Landco structure plan as being a 'yield' of residences that will support a village centre which will 'actually' be able to meet the needs of residents, create a sense of community; a 'cohesive urban form', a functional and attractive road system; and more support for public transport.

[627] As for Mr Bradbourne's arguments that the ARC and NSCC have already designated and acquired some land from the landowners, we consider that overlooks that dealing with incompatible activities is not all to be borne by the environment receiving the 'nuisance'. Indeed, looking at it dispassionately, the evidence shows that the local authorities have recently spent a great deal of money ($32 million) on acquiring additional land on the eastern edge of the Long Bay structure plan area. Further, the burden to be imposed on the landowners is not so great; the buffer areas will remain in private ownership and will add to the privacy and amenities enjoyed by future residential owners. The buffer areas are capable of use by their owners. We accept that the Awaruku Ridge buffer has fewer possible activities but its contribution to residential-amenities in terms of privacy and outlook would still be high.

4.67 Sections 6 to 8 of the RMA

[628] In relation to Part 2 of the RMA Landco relied on the evidence of Mr Bradbourne. He referred to achieving social wellbeing under section 5(2)but, for reasons unknown to us, but which raise doubts about his objectivity when discussing the RMA, he does not refer in the same way to:

989 Mr A A Bradbourne, evidence-in-chief para 7.15 [Environment Court document 80].

- cultural or economic wellbeing in section 5(2);
- sections 6(b) to (f);
- section 8;

- and his discussion of the coastal environment is confined to comparing the proposed implementing objectives. As to all other section 6 matters Mr Bradbourne simply states first that all matters traversed in section 6 are the subject of objectives (in proposed Chapters 9A and 17B) in both structure plans; secondly that the objectives are the same in both structure plans; and thirdly that those objectives and policies do recognise and provide for the section 6 matters. We hold that we should give very little weight to the evidence of Mr Bradbourne in relation to our overall evaluation.

[629] In relation to section 6 of the RMA we find that the Landco structure plan:

(a) promotes inappropriate development and use in the coastal environment and in the outstanding natural landscape of Hauraki Gulf/Long Bay,
(b) does not adequately protect Vaughans Stream which is a significant habitat of indigenous fish and invertebrates;
(c) does not adequately recognise and provide for the relationship of some iwi with their ancestral lands and sites;
(d) does not sufficiently protect the historic heritage of the coastal end of Awaruku Ridge from inappropriate use and development.

[630] In relation to section 7 of the Act: no party referred in any detail to section 7(a) and (aa); we have discussed the efficient use and development of resources - paragraph (b) - in our analysis under section 32 of the Act; paragraph (e) is repealed, paragraphs (i) and (j) are irrelevant, and the others are considered elsewhere in this decision. Section 8 is provided for in our consideration of section 6(e) matters.

4.7 Overall assessment

4.71 Introduction

[631] The end of all our fact-finding, law stating, and predictions of effects is to put us in a position where we can add all the qualitative costs and benefits for each structure plan (and any amendment to it) and decide which better achieves the purpose of the Act.

[632] In Part 0.7 we summarised the mandatory considerations when deciding a plan change. In the light of the facts, predictions and law we now make decisions about the weight to be given to the various statutory instruments discussed in Part 2.0 (the Law) of this decision. The instruments or provisions which remain to be considered further are:

(a) the operative district plan - the City Plan;
(b) proposed changes to the district plan;
(c) the Auckland RPS;
(d) the proposed Changes to the RPS;
(e) the New Zealand Coastal Policy Statement;
(f) Part 2 of the Act.

Of those, (a), (e) and (f) must be considered according to the relevant statutory tests. As for (b) - the other proposed changes to the City Plan - we do not have to consider what weight is to be given to those because there are insufficient ambiguities in the City Plan to force us up to the level at which we might need to have to resort to them. As for (c) - the Auckland RPS - we have found that neither proposed structure plan is inconsistent with the RPS. However, (d) - the proposed Changes to the RPS - need to be 'had regard to'.

[633] In all the circumstances as we have found them, we should give the Changes to the ARPS 'weight' as follows, in decreasing order of importance:

(1) subject to (2) some weight should be given to the relevant parts of Changes 8, 9 and 10 to the proposed RPS where they are relevant and therefore have to be had regard to;
(2) little weight should be attached to proposed Change 6 to the ARPS despite its general importance, because practically:

(a) the RGS' housing target for Albany, Greenhithe and Long Bay has already been achieved,

(b) Long Bay is not shown as a transport corridor on either the RGS[990] or Change 6 to the RPS[991]. Further, Long Bay is literally at the end of the road at the northern end of North Shore City.

4.72 Our assessment of the structure plans

[634] The task for the Environment Court in the MUL case *(North Shore City Council v Auckland Regional Council)*[992] was to describe whether or not urbanisation of the Long Bay and Okura areas:

> Would not necessarily have such adverse effects on the environment section to outweigh the value of use and development of the natural and physical resources involved to enable people to provide for their wellbeing, health and safety by living there.
> [Our emphasis]

In these proceedings we are faced with the task of actually making the assessments 'not necessarily' precluded by the MUL case.

[635] We should now step back and examine which of the structure plans - in their modified forms - taken as a whole in relation to all the relevant factors better achieves the purpose of the Act. In passing we should mention that a theme of the evidence and submissions[993] for Landco is that we are undertaking a balancing exercise. That is not correct: a better metaphor is that it is a weighing exercise. Our job is in fact simpler if what needs to be added on each side of the scales does not balance. We consider all matters raised, but the most important relevant factors affecting the enablement of social, economic and cultural wellbeing in the two structure plans are:

990 Auckland Regional Growth Strategy Figure 5: 'Growth Concept 2050'.
991 RPS Change 6 Schedule 1.1.
992 *North Shore City Council v Auckland Regional Council* [1997] NZRMA 59 at 95.
993 e.g. Mr Galbraith QC, opening submissions at para 5.58 [Environment Court document 21].

A. Factors for Landco Structure Plan are that it:

1. allows more than 1,000 extra dwellings to be built;
2. provides a more efficient preliminary geotechnical solution in that proposed cut equals fill and has a reduced need for secondary earthworks;
3. provides. an educational facility (interpreting archaeological features) and possibly a supermarket;
4. considerable ecological mitigation and enhancing work is proposed;
5. has more regard to implementing the Regional Growth Strategy,
6. may assist the efficiency of the public transport services;
7. will probably lead to landowners being better off as a consequence of factor 1, (but users and residents of the area will be worse off in that their wellbeing will be adversely affected).

B. Factors for the amended NSCC Structure Plan are that it:

1. better implements Chapter 17 of the City Plan;
2. better implements Tier 3 objectives of the operative City Plan;
3. has better regard to Chapter 8 of the proposed RPS;
4. gives better effect to the NZCPS;
5. provides better for the appropriate subdivision, development and use of the coastal environment and the margin of Vaughans Stream than the Landco structure plan;
6. provides better for appropriate scale development in or near the outstanding natural landscape of Hauraki Gulf/Long Bay;
7. provides better for historic heritage;
8. at least in its suggested form in Mr Mead's fifth statement of evidence[994] gives more weight to each of the six matters of national importance in section 6 of the RMA;
9. provides more effectively for environmental compensation in the form of conservation, ecological, stormwater, and 'enhancement'

994 Mr D W A Mead, 5th statement of evidence [Environment Court document 3E].

areas, whereas there are doubts about how the Landco structure plan's proposed reserves can be achieved, financed, or even whether the NSCC wants them;

10. has a preferable stormwater treatment train because it is both more comprehensive and covers a much greater area of the proposed living zones;
11. can probably improve most people's situation (including the landowners) without making anyone (including Landco) worse off - the NSCC structure plan is more efficient under section 7(b);
12. the NSCC structure plan is more conservative in terms of risks of sediment generation and deposition during earthworks.

C. Factors generally neutral as between the structure plans in relation to wellbeing:

1. comprehensive design of the lower parts (i.e. outside most of the Long Bay 1A and 1B Zones) of the LBSPA;

2. the open water, islands and planted wetlands on the Vaughans Flats as required for stormwater management purposes;
3. they both fail to recognise and provide properly for the relationship of Maori with their ancestral ties and cultural heritage.

D. Factors affecting the environmental safety net in section 5(2)(a) to (c) of the RMA:

1. the Landco structure plan is likely to have potentially greater adverse effects on terrestrial, freshwater and marine habitats and ecosystems and on indigenous fauna (especially kereru, lizards, eels and inanga) and has less rehabilitation potential.

[636] None of those factors trumps any of the others but we find readily that the factors in B (plus C and D) outweigh the factors in A (plus C) by a substantial margin. In coming to that conclusion we rely on our overall assessment of all the evidence, and on

the evaluation by Messrs Mead and Brown (for the NSCC) whom we found to be relatively comprehensive and balanced in their assessment in the light of the statutory tests we identified in Part 0.7 of this decision.

[637] We are faced in these proceedings with a problem which arises quite often - at least in the small (but difficult) percentage of cases that come to the Environment Court. That is whether one or more of the relevant factors is judged to be irreconcilable with others. Then a further judgement - a "tragic choice" Dr Somerville called it[995] - has to be made as to whether the proposed objective and/or policies aimed at achieving the least important factor can be amended to allow further avoidance, remedying or mitigation; or, whether the adverse effects it is likely to cause entail that factor should be removed from the list of matters to be summed or weighed.

[638] In other words, further iterations of the summing process may require reducing the, scale, intensity or duration of proposed activities to sufficiently mitigate the predicted adverse effects. In relatively extreme cases avoidance of some predicted effects (by not allowing the proposed activities which would cause them) may be necessary. We do not overlook that the avoiding, remediation and mitigation process works both ways. A proposed activity may - on the evidence - be so important for enabling people and communities to promote their welfare that it will outweigh the safety net in section 5(2)(a) and (b) if human wellbeing is not involved.

[639] Landco's case was that only its witnesses had considered all the relevant factors and given them the appropriate weight and therefore we should, be persuaded by its claimed carefully integrated case. Amongst the relevant factors it said must be assessed were its superior urban design, the earthworking budget, the yield of residences, the supermarket, greater uptake of public transport, and the social benefits that would flow from all these matters. We find that there are two substantial problems with the Landco approach. First none of its resource management/planning witnesses considered all the relevant plan or policy instruments, and each of them considered some irrelevant provisions (e.g. proposed Chapters 9A and 17B) in addition to over-emphasising those they did consider. Secondly, when the proper weight is given to all the relevant factors

995 Referring to "Incommensurable Values and Judicial Review ..." in [2001] *Public Law* at 717.

some are much more important than others. Indeed, as Part 2 of the Act provides, some are of national importance. Further, the factors affecting social wellbeing identified by Landco do not disenable social wellbeing because they would not have sufficient weight to make the ultimate outcome inaccurate if they are ignored.

[640] We conclude first that neither the NSCC structure plan nor the Landco structure plan gives sufficient weight to the relevant matters of national importance on:

(1) the Awaruku Ridge and Headland - preserving the natural character of the coastal environment and protecting it and the historic heritage of the Ridge from inappropriate subdivision and development; and providing for the relationship of Te Kawerau a Maki and other iwi with their ancestral sites; and

(2) preserving the cultured or cultivated natural character of the coastal environment (and outstanding natural landscape) of Homestead Spur, Grannie's Ridge, and Piripiri Point Ridge.

[641] Secondly, as between the two structure plans, we conclude that, compared with the NSCC structure plan (as proposed to be amended by Mr Mead in his fifth statement of evidence[996]), the Landco structure plan is deficient. While Mr Olliver[997] wrote that the NSCC structure plan showed 'a lack of vision' we find that it is the Landco structure plan which fails to meet the purpose of the Act in that the structure plan:

(Part 2 of the RMA)

(1) is based on an incorrect understanding of the first part of section 5(2) of the RMA;

(2) does not adequately recognise and provide for the matters in sections 6 to 8 of the Act which contribute towards enabling wellbeing, health and safety;

(3) is based on exaggerated assessments of the contributions towards enabling wellbeing that would derive from approximately 1,000 extra dwellings under the Landco SP;

996 Mr D W A Mead, 5th statement of evidence [Environment Court document 3E].
997 Mr G M Olliver, evidence-in-chief para 7.4(g) [Environment Court document 22].

(NZCPS)

(4) fails to give conscious effect to the NZCPS, and indirectly does not do so adequately;

(Proposed RPS)

(5) possibly implements Change 6 better by providing for more dwellings in the LBSPA;

(6) inadequately remedies and mitigates effects of urban development on the wider the Hauraki Gulf/Long Bay landscape;

(The Proposed Regional Plan)

(7) provides a different set of social benefits in terms of proposed Auckland Regional Plan: Air, Land and Water policy 2.2.4.6 to those in the proposed NSCC structure plan (but we cannot find that its social benefits are preferable to those in the NSCC structure plan);

(The District Plan)

(8) less satisfactorily implements Chapter 8 (Natural Environment);

(9) less satisfactorily implements the policies in Chapter 11 (Heritage);

(10) meets some of the policies in Chapter 12 (Transportation);

(11) does not satisfactorily implement the design principles in Chapter 17.

[642] In summary we hold that, as between the two structure plans, the NSCC structure plan better achieves the purpose of the Act. However, there are a number of ways in which we consider its proposed structure plan can be improved - in a number of cases as conceded by the NSCC's own witnesses. We now consider these in Part 5.0 of this decision as we turn to consider each of the proposed strategies under section 32(3)(b) of the RMA.

5.0 Outcome: the structure plan maps and strategies

5.1 Section 32(3) analysis

[643] In Part 4.0 of this decision we gave our reasons for concluding that in general the NSCC structure plan better achieved the purpose of the RMA, as assessed under the Act and all the subordinate instruments discussed, than the Landco structure plan. It is therefore our finding that Plan Change 6 should generally be based on the NSCC SP, subject to amendments which follow.

[644] Now, under section 32(3)(b) of the RMA, we should examine what amended implementing provisions, including policies or 'strategies' - to use the proposed structure plans' term - are, having regard to their efficiency and effectiveness, most appropriate for achieving the design principles of Chapter 17 of the District Plan, and the Plan's higher level objectives and policies. Those amended strategies are the improvements to the NSCC structure plan suggested by its witnesses, especially Mr Mead, and by the evidence of the other parties. In what follows, at every point where we make a finding or give a direction which alters a structure plan provision , we will base our decision on an overall and iterative assessment which considers and re-weighs all the matters identified in earlier Parts (and this Part) of this decision so as to seek a homeostatic outcome.

[645] We now turn to apply our judgement to the different units within the LBSP area separately. The LBSP area is divided into five large units as follows.

1. The slopes below Long Bay College and Awaruku Catchment;
2. The Lower Valley (Vaughans Flats);
3. The Lower Valley (south of Vaughans Road);
4. The slopes around Long Bay Primary School and Ashley Avenue;
5. The Upper Valley (generally west of Long Bay Primary School and of stream 4).

5.2 The Slopes Below Long Bay College and Awaruku Catchment [i.e. Awaruku Ridge Headland and Slopes and Vaughans Slopes (South)]

5.2.1 Consideration

[646] The two structure plans propose competing land use strategies for the headland on the lower Awaruku Ridge. Landco proposes that a relatively small area incorporating a "representative sample" of the heritage resources vest as reserve (zoned LB7). NSCC proposes that, subject to comprehensive historic heritage management and development plans approved by Council, limited residential and community activities may occur as a discretionary activity at a density not exceeding those for the LB 1B zone[998]. The NSCC SP would leave the area largely, but by inference not entirely, in private ownership. Mr Mead, in his final statement, opined that relevant objectives, policies and methods could be amended by, amongst other things, "strengthening references to the likelihood that part of the HPZ will be transferred to the Council as a reserve"[999].

[647] We described earlier how section 6(a) of the RMA, reinforced by the NZCPS and Change 9 [Hauraki Gulf Maritime Park Act] to the Auckland RPS, suggests on the evidence that this part of the LBSPA's natural character should be preserved. It would not be if developed as in either structure plan. Those instruments together also make it *prima facie* inappropriate to develop that part of the Awaruku Headland not in 'public' ownership as residential. As for the Awaruku Ridge, we have described how the gentle upward slope of the ridge above the initial steep scarp of the headland entails that it is difficult to choose a line across or around the headland which will not make houses visible from many places in Long Bay Regional Park. That concern appears to be the motivation for Ms Lucas' buffer line. However, while we understand the uncompromising rigour of that line, we consider it goes too far inland. We have two reasons for that judgement: first, because as discussed above the Regional Park itself is considerably less natural off the Awaruku headland than elsewhere; and secondly because we must give proper weight to *(inter alia)* the urbanisation policies. Both those factors tend to push dwellings back down the ridge. But as the limit of development moves down the Awaruku Ridge under the influence of the policies favouring

998 Refer NSCC SP 17B.4.8.

999 Mr D W A Mead, fifth statement of evidence 19 October 2007 [Environment Court document 3E].

urbanisation, yet other nationally important countervailing factors - which weigh in on the side of the landscape and coastal environment matters - increasingly come into play. They are that we must also recognise and provide for the tangata whenua[1000] and historic heritage[1001] issues and to a small extent because of stream 2A's degraded state, protect most of its catchment. While Landco was correct in submitting[1002] that "....the presence of a feature of national importance does not automatically make development inappropriate, and may not outweigh other Part 2 matters in the overall exercising of the Court's discretion" in this case we find that, on the facts as we have found them and the predictions we have made, they do.

[648] Weighed against (and with) all other relevant considerations, the combination of section 6(a), (b), (e) and (f) factors persuade us that we should draw a Heritage Protection Area ("HPA") boundary line across the Awaruku Ridge to safeguard the preceding matters and the Awaruku Headland. The line is to:

- Commence at a point on the North-South LBSPA boundary north of Long Bay Drive[1003]. The line is to then cross to and follow the crest of the first spur to the west[1004] of the ditch and bank fence [R10/1098-7] until it joins the "amended Foster line" shown[1005] in black on his Plan 1;
- From there the line is to follow the "amended Foster line" generally west and then north around Site R10/1079 as shown on the previously described Plan 1;
- It is to then generally proceed NE, initially on the "amended Foster line," to the corner in the LBSPA boundary near a farm building (but excluding Site R10/1078 from the HPA).

1000 Section 6(e) of the RMA.
1001 Section 6(f) of the RMA.
1002 Landco Closing Submissions para 6.7 [Environment Court document 87].
1003 Long Bay Drive is incorrectly shown as Beach Road on Exhibit DM16.
1004 We understand this to be the spur which separates the catchments of streams 11.01 and 11.02 on Dr V Keesing's evidence-in-chief attachment 3: Figure 1 [Environment Court document 37].
1005 Mr R Foster, supplementary statement dated 16 October 2007 [Environment Court document 15B.

[649] At all points, the HPA boundary is to afford a minimum 30m buffer from protected heritage sites within the HPA. For the reasons given by Mr Foster[1006] we find that an universal 50m buffer as supported by Dr Campbell would be excessive. It is recognised that the crest of the spur to the west of the ditch and bank fence [R10/1098-7] may be more than 30m from that site. We have consciously adopted a cautious approach along this length so that the site is protected by an intact natural feature - the spur running up from the Awaruku Valley - from the uncertain but potentially adverse effects of earthworks.

[650] We accept, with the exception of R10/1078, the evidence of Mr Foster that "...the portion within the [HPA as now defined] forms an entire unit of the 19th century landscape and has landscape, historical, educational and interpretational values that would be lost if any lesser portion were to be protected ..."[1007]. However, while we have given the subject anxious thought, we consider it is not justified to retain all the middens on the northern faces of the Vaughans Slopes (South), or the full length of the E-W ditch and bank fence [R10/1098-5].

[651] The LB 7 zone should apply to both the HPA and an adjoining area on the HPA's inland boundary. The adjoining area is to share much of that western boundary of the HPA and be at least one allotment deep (not less than 30-40 metres). The purpose of the adjoining area is to enable development in the LB 7 zone, which we elaborate on shortly. It might be appropriate if the structure plan were also to show a preferred road on the western margin of the developable area for frontage purposes. Here and elsewhere we leave the detailed provisions to the parties for resolution in conjunction with related judgements as to strategy.

[652] As to subdivision of the LB 7 Zone, Mr Nugent's opinion for the ARC was that[1008]:

1006 Mr R Foster, supplementary statement 16 October 2007 para 5 [Environment Court document 15B].
1007 Mr R Foster, rebuttal evidence para 3.4 [Environment Court document 15].
1008 Mr T D Nugent, evidence-in-chief para 4.15 [Environment Court document 82].

> ... an appropriate design solution would be to enable 10-20 large lot sites of around 1,000 m^2 each along the edge of the HPA on the Awaruku Ridge, with the owners of those sites having an undivided equal share in the HPA so that it may be managed as one entity. The HPA would ensure that the views across it from the owners properties would be unhindered in perpetuity, as well as protecting the heritage resource.

We accept that is conceptually an appropriate method.

[653] We have deliberated at length over the merits of the competing NSCC and ARC "strategies", and Mr McGovern-Wilson's evidence for the NZHPT. Positively, the NSCC SP has the prospect of some land vesting as reserve, with the permanent protection and public access which that affords. However, weighing all factors appropriately we have found the outcomes of the NSCC SP too uncertain. It leaves unanswered issues as to what development might ultimately be approved by consent application(s); what effects such development might have on the heritage resources; and, if reserves were to. vest, how coherent the resultant pattern of development might prove.

[654] Subject to constraints on the external boundaries of the zones and one other matter, the Court makes no findings about the specific size or disposition of the areas zoned either LB 3, LB 4 or LB 5 on the Vaughan Slopes (South) and at the northern end of Ashley Avenue. Provided the areas zoned LB 3 - 5 generally remain proportionate, ie LB 3 is the largest and LB 5 the smallest, we find no resource management reason why the areas zoned should not find their own equilibrium determined by land owner preference and its assessment of the market.

[655] We have made findings in respect of the road network proposed to support the centre and are mindful of the potential for LB 7 changes as directed to have consequential earthwork design implications for the village, centre. We accept the evidence of Mr Mead for the NSCC and Mr Lunday for OEG that some additional height and therefore intensity in and around the village centre is appropriate[1009].

[1009] Mr D W A Mead, fifth statement of evidence 19 October 2007 para 8.7 1st bullet [Environment Court document 3E] and Mr J Lunday, evidence-in-chief paragraphs 9.17, 9.19, 10.9 and conclusions [Environment Court document 71].

[656] There are several other matters that need to be addressed on the Awaruku Ridge. First, if the Beach Road extension proves necessary, it would need to be carefully designed to ameliorate its effects, as viewed from the slopes of Torbay[1010], and its impact on the natural environment. A wide tree-lined avenue of the sort described by Mr Egerton seems appropriate. Secondly, care should be taken in the relationship between existing Torbay houses and the new development on the southern face of Awaruku Ridge. More particularly, we endorse proposed pedestrian and cycle facilities of the type shown on the NSCC SP Map: Walkways, Cycleways and Roading, which connect Glenvar Road to the College and other parts of the Ridge. Thirdly, when reviewing the earthworks design to give effect to this Decision, every reasonable effort should be made to avoid the major retaining wall[1011], perhaps using techniques of the type described by Mr Alexander[1012].

[657] The competing zonings on the lower Awaruku Slopes (north of the Awaruku Stream) need to be resolved. We described in Part 0.4 how the NSCC SP proposes a mix of LB 2B (1,000 m^2 minimum) and LB 1B zones (5,000 m^2 minimum) in this area. The Landco SP proposes a mix of LB 2A(i) and (ii) zones (450 m^2 minimum/500 - 600 m^2 average). Ms Davison said there were "issues" about earthwork effects at the base of the Slope. We are guided on this matter by the evidence that both the structure plans "could be engineered to achieve the required stability design criteria"[1013] and Mr Alexander's answers to related questions from the Court[1014]. We also note Mr Mead's evidence that zoning of the slopes warrants reconsideration. His opinion, which was endorsed by NSCC's counsel in closing, is that there is additional development potential in the (NSCC) LB 1B zone in this area[1015]. We also take into account Ms Davison's evidence[1016] that she had previously recommended to council that the "LB 2A zone of 600 m^2 be extended across the Awaruku slopes other than for an area closer to the Park".

1010 Mr J Lunday, evidence-in-chief paragraphs 9.8 and conclusions [Environment Court document 71].

1011 As shown on Drawing SV07, we have difficulty relating the structure plan "features" shown on the Drawing SV07 to the x-section locations on SV03 and assume they are shown in the wrong order.

1012 Transcript p1391 line 24 ff.

1013 Joint Statement of Evidence relating to GeotechnicaI and Geological Site Issues, 31 May 2007, para 1.12 [Environment Court document 6].

1014 Transcript p1393 lines 27 - 34.

1015 Mr D W A Mead, fifth statement of evidence 19 October 2007 para 8.7 3rd bullet [Environment Court document 3E]; and NSCC Closing Submission para 10.14 [Environment Court document 88].

1016 Transcript page 536 line 24.

Subject to revision of the preliminary Landco design[1017] to ensure earthworks avoid the Awaruku Stream and have the least practical effect on the wetland, we find that either of the Landco LB 2A zonings would better implement Objective 17.4.1 of the City Plan and not be incompatible with the reasonable expectations of Torbay residents[1018] in relation to their amenities.

[658] The parties also need to review the small area of LB 1B zoned land in the NSCC SP in the southeastern corner of the LBSPA, which fronts Beach Road, is south of the Awaruku Stream and is bisected by the Beach Road extension. Under the Landco SP this is zoned LB 6 (Recreation and Stormwater Management). This is an unusual area of land and its practical development requires confirmation. We also appreciate that the HPA we have drawn and other Awaruku findings will require revision of the preliminary earthworks design. We expect there are feasible engineering solutions.

5.2.2 Revised Strategy for the Slopes Below Long Bay College and Awaruku Catchment [ie Awaruku Ridge, Headland, and Slopes and Vaughans Slopes (South)]

[659] Here and elsewhere we use the term "revised strategy" in a generic sense to describe material that may ultimately be contained in the provisions of the plan change, and not just in the current versions of proposed strategy 17B.1.3. Subject to comments we will make below about the rationalisation of the plan change provisions; any of the NSCC's strategy provisions in 17B.l.3 which are not inconsistent with our findings may be retained. The revised strategy should be:

(1) to protect and enhance the heritage values and *cultured* natural character of the Heritage Protection Area, being generally the Awaruku Headland and the seaward end of the Awaruku Ridge including some of the Awaruku Slopes and Vaughans Slopes (South)];

(2) to develop for housing and village centre only those areas excluded from the area of national importance being the Heritage Protection Area as defined above, and from the floodplain of the Awaruku Stream.

1017 Wood and Partners Drawing 150 issued 02/03/07.

1018 Transcript p537 line 14 ff: cross-examination of Ms Davison

(3) to concentrate conventional to high density housing on the Vaughans Slopes (South) north of Long Bay College;

(4) to include the HPA in a larger LB 7 Zone - Heritage Protection - and, on subdivision, for all sites in the zone to have a proportionate undivided share (based on the total number of lots in the zone) of the 'heritage protection, area' with a legal mechanism to ensure that multiple dwellings on a site have an undivided interest in the HPA and financial responsibility for its maintenance;

(5) to manage land activities in the HPA so as to avoid further damage to the heritage sites. In practice this will require the HPA to be maintained in grass and for pastoral use to exclude cattle, pigs or horses. Methods are to include rules that permit mowing and the grazing of lighter stock consistent with the intent and spirit of our findings; and that the only built structures provided for in the HPA should be accessory to its maintenance and for interpretative purposes[1019];

(6) subdivision of land in the LB 7 Zone should ensure that each site contains sufficient land outside the Heritage Protection Area to provide a building platform and access that will not require development, including earthworks, that would adversely affect any archaeological site. It is unnecessary to specify a minimum number of dwellings for the LB 7 zone. We find that this is a location where development at LB 3 zone densities could be appropriate so that more dwellings (than LB 2) might enjoy the amenities which will doubtless attach to the HPA and for associated financial costs to be spread across a wider base;

(7) off-line stormwater holding pond(s) and landscaping shall be developed in the bed of the Awaruku Stream;

(8) the LB 3 - 5 zones are to be located so that development, including earthworks:

- does not intrude into any Vaughans Stream riparian buffer;
- extends no further east than the amended LB 7 zone boundary which we have set; and

1019 Mr D W A Mead, fifth statement of evidence 19 October 2007 para 6.3 2nd bullet [Environment Document 3E].

- extends no further west than shown on the Landco SP (July 2007); and extends no further south than the crest of the Awaruku Ridge;

5.3 The Lower Valley (Vaughans Flats)

5.3.1 Consideration

[660] The Landco earthworks drawings show (provisionally) that earthworks may take place down on the Flats and in one place[1020] (around pegs LE12 and 20) in the bed of Vaughans Stream itself. On the Flats as elsewhere earthworks should avoid the stream and a buffer will be necessary. We consider there should be provisions keeping earthworks and urban zoning out of Vaughans Stream and its riparian margins. We anticipate that in policy terms the floodplain on the Vaughan Flats should be differentiated from the mid and upper reaches because earthworks have to be accommodated for stormwater management ponds (and possibly to support earthworks on the flanking slopes). There are proposed rules (eg. Rule 9A.4.1.4) which regulate works in proximity to a stream. Those provisions may need to be reviewed.

[661] In order to comply with the design principles there is also a strong case for imposing a buffer on the southern side of the stream. There is a good indicator line for management of the southern side of the Vaughans Flats at present: the relatively new fence that runs parallel with, and keeps stock out of Vaughans Stream.

[662] We should also mention that there may be a mismatch between both structure plan strategies and the maps. The strategies state[1021]:

- the 'village green' is to provide a focus for passive recreation, as an essential link in the corridor extending inland from Long Bay to the upper valley, and will be a major visual focal-point for development both sides of the valley.

The area within which the 'green' is to locate is shown on both structure plans as an area for reserve and/or stormwater management area[1022]. We consider it would be helpful if the location of the proposed village green was identified.

1020 Plan 150 as amended for the site inspection.

1021 'Comparative Text': The Yellow Book p. 80.

1022 Refer Long Bay Catchment Management Plan (August 2006): Volume 5 of 6: Figure 6-1, Wetlands 9 and 8c.

5.3.2 Revised strategy for Vaughans Flats

[663] The revised strategy for the Vaughans Flats should be:

(1) to enhance the water quality, habitat values and fisheries (especially inanga and eels) of Vaughans Stream and its margins and of stream 2;

(2) the stormwater management ponds and the remainder of the Flats outside the margins of Vaughans Stream will be a focus for passive and active recreation (especially walking and cycling) and for views from either side of the valley, and on accessways up and down the valley.

(3) the riparian margins of Vaughans Stream to a distance of at least five metres from the top of the banks of the stream shall be planted in native vegetation according to an approved management plan and managed for ecological purposes as a reserve (with a footpath at least on the southern side of the stream);

(4) the floodplain shall be managed for the construction and operation of approved off-line stormwater management ponds and wetlands (except for those areas which the NSCC has identified for reserves);

(5) the bed and banks of Vaughans Stream shall not be modified by earthworks or structures except for three crossings: one road bridge and two pedestrian/cycleway bridges (which may double as a stormwater pipe crossing);

(6) particular care should be taken with the ecological and landscape design of the interface with the Long Bay Regional Park so as:

(a) to protect Vaughans Stream and the streams that join it in this area;

(b) to enhance the breeding areas for inanga and the quality of the water in those areas.

5.4 The Lower Valley (South of Vaughans Road) [Vaughans Slopes (North), Homestead Spur, Grannie's Ridge, Piripiri Point Ridge and Vaughans Road Ridge]

5.4.1 Consideration

[664] The area described in the proposed structure plans as the "Lower Valley" is very complex, especially as it includes areas - part of the Grannie's Ridge, and all of the Piripiri Point Ridge - which are not in the Vaughans Stream catchment at all.

[665] We judge that some of the upper Vaughans Slopes (North) can be developed for suburban residential purposes, subject to limitations and changes in specific areas which we come to shortly. Little differentiates the Landco and NSCC schemes for development on the lower slopes although we can see merit in NSCC's proposal having a mix of LB 3 and 4. To identify the appropriate boundaries of such development the area covered by the structure plan strategies needs to be considered in smaller units to reflect their very different characters. Accordingly we now exercise our judgement in respect of:

- Homestead Spur
- Grannie's Ridge
- Piripiri Point Ridge
- Vaughans Slopes (north) - Catchment 1C and land to the west
- Vaughans Road ridge.

5.4.2. Homestead Spur

[666] The Regional Park has replanted most of its land on this spur. What Landco's structure plan proposes along the Homestead Spur boundary is uncertain because its various maps and witnesses were inconsistent, as we have recorded. For the ARC, Mr Coombs was concerned[1023] about the Landco structure plan since it appeared to require significant cut and fill to the Regional Park boundary. We accept Mr Mead's evidence for the NSCC that setting a uniform distance from the Park boundary would not necessarily be the best approach[1024] and that the 10 - 15m buffer conceded by Mr

1023 Mr B T Coombs, evidence-in-chief para 7.25 [Environment Court document 55].
1024 Mr D W A Mead, fifth statement of evidence para 4.3 [Environment Court document 3E].

Slaven[1025] in cross-examination would not be sufficient in all places. We have also taken into account Mr Olsen's fairly stated concerns about the need to achieve an appropriate interface with the Park, his particular concern with the "south eastern" corner and figure depicting a "sensitive" area[1026].

[667] Both structure plans propose that stream 0 be filled in. We found in Part 3 of this decision that is likely to be an adverse effect unless there is a buffer between any urban development and the Regional Park on the Homestead Spur. As an alternative to the NSCC structure plan Mr Alexander, for the ARC, suggested[1027] that any spoil from the road should not be placed in stream 0 but in what he described as the 'Y'-shaped valley to the west, i.e. streams 1A and 1AA. The use of those valleys and the spur between them would avoid the need for 'extensive filling on the Regional Park boundary"[1028]. Mr Alexander and Mr Williams, for Landco, were agreed[1029] that any westward realignment of the 'Beach Road extension' (i.e. a road from Vaughans Stream up to Vaughans Road) would need a complete re-design of the structure plans and, presumably, any earthworks to give effect to them.

[668] As a consequence of reading and hearing the evidence of other witnesses, Mr Mead had second thoughts about this area. In his final evidence[1030] he produced a map showing a "proposed landscape protection (conservation) area". We consider that Mr Mead, was heading in the correct direction and we judge that there should be a suitably dimensioned buffer between urban activity in this part of the coastal environment and the Regional Park. In order that the buffer will afford a suitable interface with the Park, we accept Mr Mead's evidence that it should have a LPA overlay. Whether LP [Conservation] Area is the most suitable overlay category is still an open question in our minds given the area has little existing indigenous cover. In any event the buffer is to remain free of structures.

1025 Transcript p. 1234 line 4 and Mr M Williams, fourth statement p. 5 footnote 2 [Environment Court document 30C].

1026 Mr N W Olsen, evidence-in-chief paragraphs 7.13 ff, 8.3(b) and Annexure No 6 [Environment Court document 57].

1027 Mr G Alexander, evidence-in-chief para 5.55 and exhibit GA09 [Environment Court document 45].

1028 Mr B T Coombs, evidence-in-chief para 7.22 [Environment Court document 55].

1029 Mr M G Williams, fourth statement para 3.3 [Environment Court document 30C].

1030 Mr D W A Mead, fifth statement of evidence Exhibit DM 5.1 [Environment Court document 3E].

[669] A slightly more complex issue here is to what height stream 0 should be filled in to because in order to marry slopes there may need to be earthworks within Mr Mead's proposed buffer. In our view the depth of any earthworks across stream 0 should be determined by the adjacent height of the spur so that both views and noise are shielded from the adjacent area of the Regional Park. Accordingly we consider that the finished ground level of the fill across stream 0 should be a minimum of six metres (about one house height) below the crest of the Homestead Spur on any east-west line.

5.4.3 Grannie's Ridge

[670] The competing zonings are LB1B (NSCC), LB 2B(ii) (Landco) and an unbuilt buffer for a larger zone (Long Bay Society). As both Ms Lucas and Mr Boffa noted,[1031] we face an "unnatural" situation at this location in that the LBSPA extends over Grannie's Ridge into the adjoining catchment. This creates the potential for development to intrude into otherwise natural Park views. We have previously endorsed Ms Lucas' assessment[1032] that "....the Grannie's catchment, from ridge to coast, ...[has] outstanding natural landscape values" and accept her evidence[1033] that the "...uncluttered naturalness and ruralness, the unbuilt character of Grannie's ridgeline is a key landscape characteristic of the Long Bay coast".

[671] Mr Boffa's initial preference that the north facing slopes of the Grannie's Bay catchment be added to the Park did not gain traction during the hearing. And we do not share Ms Lucas' opinion that the appropriate resource management response is to place the north and south facing slopes of the Ridge in a buffer area to "entirely avoid" built change on the ridgeline[1034]. Instead we find the approach proposed by Mr Williams[1035] to be a potentially more creative and acceptable way of resolving the competing considerations. Simply put, it was his view that the top of Grannie's Ridge should be lowered and recreated on the SPA/Park boundary north of the natural crest with the recreated ridge having sufficient height, planting and setbacks to screen dwellings from

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1031 Ms D J Lucas, evidence-in-chief para 56 [Environment Court document 68] and Mr F Boffa, evidence-in-chief para 4.5 [Environment Court document 29].

1032 Ms D J Lucas, evidence-in-chief para 72 [Environment Court document 68].

1033 Ms D J Lucas, evidence-in-chief para 117 [Environment Court document 68].

1034 Ms D J Lucas, evidence-in-chief para 141 and Appendix 1 Area B [Environment Court document 68].

1035 Mr M Williams, fourth statement of evidence 1 October 2007 paragraphs 2.23 - 2.25 [Environment Court document 30C].

Grannie's Bay views. Mr Boffa lent carefully qualified support for this approach[1036] and Landco indicated in closing that an approach of this type would not undermine, the integrity of its structure plan[1037]. In fact it described lowering the ridge as essential to key aspects of achieving its Vaughans Slope (North) plan. As long as the houses were sufficiently screened or set back from the new ridge to the north that they cannot be seen from either Grannie's Bay beach or the upper parts of Grannie's catchment close to the boundary (or anywhere between) we consider that proposal has merit.

5.4.4 Piripiri Point Ridge

[672] This part of the LBSPA is located in the Grannie's Bay catchment[1038]. The competing zonings are the same as those for the Grannie's Ridge. Having weighed all the relevant considerations we rely on the evidence of:

- Mr Boffa, who considered[1039] that any form of suburban or large lot rural residential development should be avoided; that the Ridge would be better included in the Regional Park, and if this were not possible, there was little to distinguish the two structure plans;
- Mr Coombs, who was rightly concerned that "[a]t conventional suburban densities the development of [the Ridge] would provide no protection of the landscape values of the backdrop to Grannie's Bay[1040]". He considered the NSCC SP needed fine-tuning to reduce potential effects on the Regional Park to an "acceptable" level[1041];
- Mr Olsen, the senior recreation advisor for the ARC[1042];
- Ms Lucas[1043], who included the Ridge in her 'Grannie's' analysis. In addition to her overall analysis we specifically adopt her evidence on the

1036 Mr M Williams, fourth statement dated 15 September 2006 (sic) Annexure 7 [Environment Court document 30C].
1037 Landco closing submissions paragraphs 7.6 - 7.8 [Environment Court document 87].
1038 Ms D J Lucas, evidence-in-chief Attachment 3: Catchments [Environment Court document 68].
1039 Mr F Boffa, evidence-in-chief paragraphs 4.5 - 4.8 [Environment Court document 29].
1040 Mr B T Coombs, evidence-in-chief para 7.28 [Environment Court document 55].
1041 Mr B T Coombs, evidence-in-chief para 7.34 [Environment Court document 55].
1042 Mr N W Olsen, evidence-in-chief paragraphs 7.17, 7.18 and 8.3[c] [Environment Court document 57].
1043 Ms D J Lucas, evidence-m-chief para 56 ff, Attachment 2: Place Names, parts of Ridges para 115 ff, and parts of Grannie's Ridge para 138 ff [Environment Court document 68].

likely efficacy of mechanisms securing screen planting in such locations and the potential effect of large residential lots.

- and find that Piripiri Point Ridge is such an important part of the coastal environment and of the Hauraki Gulf/Long Bay ONL that urban development is completely inappropriate for the reasons we have previously discussed.

[673] Mr Nugent also addressed the Piripiri Point Ridge. In his opinion the concerns of the preceding witnesses could be accommodated in a suitable fashion by vesting an unsubdivided share of the Ridge in one or more clusters of dwellings in the LB 1B zone proposed by NSCC, and generally supported by his client, the ARC. We find this to again be a generally suitable approach but as the Vaughans Slopes (North) are to be zoned residential suburban, modifications to his specific proposal are required. Landco submitted, without supporting reasons, that if the Court were to come to such a conclusion "....it would prefer [the Ridge] to form part of a single title (that is attached to just one dwelling) rather than it being attached to a series of titles"[1044].

[674] In fact there is a reason to prefer Landco's approach. At present the Piripiri Point Ridge land owned by Landco is, by agreement, to provide for public access (and services) from the end of the Vaughans Road formation to the recently acquired NSCC reserve to the north. Mr Smith considered that any consideration of subdivision arrangements on the Piripiri Point ridge land should take into account the construction and operation of this road[1045]. Given these requirements we consider that it would be more appropriate for the Piripiri Point Ridge land to be held in one title - including an area of land to the south of the recreated Grannie's Ridge containing an identified building platform, - and with a zoning similar to the City Plan Rural 4(ii) zoning in the Okura area.

[675] The most important outcome to be obtained for the Piripiri Point Ridge is to avoid any buildings on it. At least two solutions present themselves[1046]. The first,

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1044 Landco closing submissions para 7.5(d) [Environment Court document 87].
1045 Mr B J Smith, Third Statement of Evidence, section 8.
1046 We give two below: a third may involve the land in the Rural 4(ii) Zone under the City Plan (which relates to the Okura catchment).

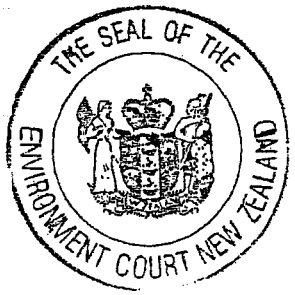
building on the Landco final submissions, is for any subdivision of the site containing the Piripiri Point Ridge to have the ridge included in one allotment with a single building platform located south of the Piripiri Point Ridge/Grannie's Ridge junction. The alternative is to adopt Mr Nugent's solution of having the Piripiri Point Ridge lot held in equal, unsubdivided shares by a cluster of houses in the existing woolshed area. Either way a covenant in perpetuity against further structures on Piripiri Point Ridge would be essential. We leave it to the parties to find. a suitable mechanism - presumably involving consent notices or covenants - to achieve any of those outcomes but will reserve leave to any party to come back to the Court if agreement is not reached.

5.4.5 Vaughans Slopes (north) - Catchment 1C and land to the west

[676] Because of the numbering of the streams, some care needs to be taken in the following discussion not to confuse zonings, e.g. LB 1B, with streams, e.g. stream 1B. We identify all zonings with the prefix 'LB'.

[677] The NSCC SP proposes that the gullies of streams 1C and 4 and surrounding land be zoned LB 1B with LPA overlays. The Landco structure plan proposes reserves separated by LB 2A(ii) zoning. We have described how the Landco drawings for the Vaughans Slopes (North) show a large wedge-shape reserve around stream 1C and that the four pegs shown on the plan[1047] indicate that earthworks may take place within the catchment of this piece of remnant forest. We appreciate that the proposed palisade walls are intended to hold up the spurs which define the sub-catchment on either side, but we have predicted that earthworks within the sub-catchment may cause short-term (damage to root systems) or long-term damage (wind-throw, changed groundwater conditions) for this important patch of forest. We judge that to meet the design principles satisfactorily earthworks should be kept outside the eastern and western ridges and the headwalls of Catchment 1C and be designed so as to put no pressure on the spur walls from the outside and to have no adverse effects on groundwater flows and revegetation. We make the same finding in respect of Catchment 4.

[678] We next consider what zoning should apply to the land between the eastern ridge of Catchment 4 and the western ridge of Catchment 1C. This is the area drained by



1047 Wood and Partners 2/3/07 Drawing 152.

Catchment 1D. The NSCC SP proposes a LPA overlay (ecological/stormwater area) for at least the perennial section of stream 1D, which we endorse as an appropriate restoration measure and a LPA connection with Catchment 4. The LPA limitations to development together with our immediately preceding finding on streams 1C, 1D and 4 significantly reduce the area potentially available for development in Catchment 1D. For these reasons we find the area better suited to LB 1B zoning than LB 2.

[679] Having made the preceding findings we can now set the western LB 2 boundary on the upper Vaughan Slopes (North). We find this should be a few (say five) metres east of the eastern boundary of Catchment 1C in order to protect the crest of the spur dividing the catchment of stream 1C from 1B and 1AA. Land to the west of that is to be zoned LB 1B but with a no-earthworking, no-building LPA in the triangle between the junction of streams 1C and 1D, those streams, and the top of the steeper slopes at the head of stream 1D.

[680] The southern boundary is as complex. In catchments 1A and 1AA, one solution is Mr Alexander's filling of the Y-shaped valley. However, we understand that from a design point of view it may be preferable to have an approximate rectangular shape from bottom to top. That suggests that:

(1) at the least stream 1B will need to be involved in the earthworking process; and

(2) possibly that the ridge between stream 1B and the main stem of Vaughans Stream will need to be removed to a point a little west of the junction of the valleys 1C and 1D.

We hope the parties can agree on an engineering solution there, but if not we will hear evidence and resolve the issue as to the western limit of development to the south of stream 1B (always bearing in mind our earlier judgement that streams, 1C, 1D and 4 should not be earthworked but enhanced by replanting). If stream 1B is to be re-aligned as suggested by Landco it is to be subject to an appropriate LPA overlay and reinstated as naturally as possible.

[681] As for the area south of streams 1B and 1D, the LB 3 zone boundary should be drawn about five metres east of the stream 4 catchment. Findings for the interface with Vaughans Flats are given in a previous section.

5.4.6 Vaughans Road Ridge

[682] Land fronting the 250m section of concern to the ARC is to be zoned LB 2 in accordance with earlier findings. Structure plan provisions are to be framed allowing for a 10m setback on the road frontage with control flexibility assessment criteria that differentiate between single and multi storey buildings. The criteria should generally preclude the latter.

5.4.7 Revised Strategies for the Vaughans Slopes (North)

[683] The outcome of all the above is that the area of the Vaughans Slopes (North) suitable for urban development is considerably smaller than proposed in the Landco structure plan. On the other hand the area that is suitable for urban development is capable of more intensive development than suggested on the NSCC structure plan. It is the area bounded by:

(1) the Homestead Spur buffer;
(2) the Grannie's Ridge and Piripiri Point Ridge buffers to the northeast;
(3) Vaughans Road;
(4) the outside of the eastern ridge of catchment 1C to the west and with a south-western extension to the lower catchment of stream 4

- which we will call the "North Vaughans Living Zone" as a generic name. We realise that the earthworking required to implement the North Vaughans Living Zone will not meet the design principle[1048] that the structure plan should '... reflect the capacity of the existing landform without significant modification' but consider that in this area the growth required by Change 6 to the Auckland RPS over-rides that design principle. We also consider there to be relevant benefits in allowing for the proposed road up the north Vaughans slopes and enabling a comprehensive approach to the creation of stable building sites that minimises secondary earthworks.

[1048] Design Principle 17.5.5(1) [NSCC City Plan: p. 17-9].

[684] The revised strategy for the Vaughans Slopes (North) should be:

(1) subject to (2) to (4) the North Vaughans Living Zone should be rezoned using any of the LB 2 to LB 4 Zones, generally as in either structure plan;

(2) the amenities and ecological systems of Long Bay Regional Park and its interface with the LBSP area shall be protected and enhanced in particular by the provision of LPAs as buffers within the LBSP area;

(3) the catchment of stream 1C up to and including the top of the headwall in its gully and a five metre buffer around it should be an LPA;

(4) a riparian buffer and LPA [ecological/stormwater] overlay are to be maintained on:

- streams 1C and 1D;
- stream 1B or any realignment of it;

(5) reshaping of Grannie's Ridge so as to place buildings behind (to the south of) the new ridge so as not to be visible from any part of the Regional Park in the Grannie's Bay catchment; and

(6) the Piripiri Point Ridge land is to remain in one title [with its own Rural 4(ii) type zoning] and to include a nominated building site clear of the Ridge. The land should remain in rural/pastoral activities.

(7) provide a 10 metre setback on the 250m section of Vaughans Road ridge with control flexibility assessment criteria for single and multi storey structures.

5.5 The slopes to the west of Long Bay Primary School and Ashley Avenue [Glenvar Slopes]

5.5.1 Consideration

[685] Key differences in the zoning patterns proposed by NSCC and Landco are readily discernible from their respective land use strategies[1049] and structure plan maps. Both approaches allow for LPAs and the "proposed" Glenvar extension road; albeit with differences in detail. We have no view on the specific alignment of the road except that

[1049] Proposed Policy 17B.1.3.

it should generally follow the ridge, which separates catchments 3 and 9; and avoid the headwaters of stream 9C[1050].

[686] Our principal concerns with the Landco structure plan for land on the Glenvar Slopes are (in decreasing order of importance):

(1) the probable de-watering of the main stem of Vaughans Stream by 30% between streams 9A and 3;
(2) the extensive earthworks required,
(3) the existence of the Ministry of Education designation which would block the Glenvar extension road unless the designation was withdrawn, modified, or a section 176 consent granted by the requiring authority;
(4) the sacrifice of bush along stream 9A.

[687] We turn now to the question of the apparent conflict between the Minister's school designation and the Glenvar Road extension. Obviously both cannot occupy the same space and something must happen if the road is to be built. Although a section 274 party, the Ministry of Education was neither represented at the hearing nor filed evidence in its own account. Dr Somerville told us the Ministry is amongst the parties who generally support the Plan Change, albeit subject to amendments[1051]. No specific amendments were sought by or associated with the Ministry. Landco, which does not own the affected land[1052], proposes a road be formed across it. Mr Smith's evidence[1053] correctly acknowledged the need for section 176 approval if the work is to proceed. The Ministry of Education letter of 8 August 2007 attached to his evidence does not give certainty that the proposed road and second school (said by the Ministry to be required to service either structure plan) are mutually compatible. The letter simply expresses more confidence in the "possible execution" of Landco's SP ahead of the NSCC SP.

1050 Dr D Kettle, rebuttal evidence Figure DK-R7 [Environment Court document 12A].
1051 Dr Somerville Opening Submissions para 1.7 [Environment Court document ??].
1052 Mr G Olliver, evidence-in-chief Annex 1 [Environment Court document 22].
1053 Mr B J Smith, third statement of evidence para 7.1 and Appendix 7 [Environment Court document 79].

We are left wondering whether the Court has heard all that is relevant on the subject. As it is not a matter in dispute, we might normally not be minded to pursue it further. However, the agreed transport evidence is that the SPA requires four connections to the wider network[1054] and we have required that the need for one of those be reviewed with a view to its possible deletion. Knowledge of the viability of the Glenvar Road extension is critical to the review. Before we approve any structure plan strategy which includes a Glenvar Road extension for the Glenvar Slopes we will need to be satisfied there are sound grounds for believing that it can be implemented (for example under a section 176 RMA consent).

[688] For the preceding reasons, we find that the relevant Part 2 of the Act, District Plan objectives and design principles would be better met if the NSCC SP were adopted for the area north of Glenvar Road extension. Conversely, we find that the relevant provisions would be equally well served by the Landco SP for Catchment 3 and that in this area LB 2 is appropriate.

5.5.2 Revised strategy for the Glenvar Slopes

[689] The revised strategy should be:

(1) to enhance the water quality and native bush remnants in the catchments of streams 9, 12 and 13;

(2) that land in the catchment of streams 9 (upstream of stream 9C); 12 and 13 should be zoned LB 1A (2,500 m^2 minimum) and LB 1B (5,000 m^2 minimum) as shown on the NSCC structure plan. This area is now to be included in the Upper Valley;

(3) the land east of stream 9C shall be zoned LB 2 generally as shown on the NSCC SP;

(4) in catchment 3 the Landco structure plan's zonings are appropriate provided that greater protection in the form of an LPA [Conservation] is given to the existing northern area of bush consistent with the NSCC structure plan;

1054 Joint Statement in relation to Transportation Matters, 7 March 2007, para 6.1 [Environment Court document 6]

(5) all earthworking/geotechnical devices shall be kept clear of the Landscape Protection Areas on the NSCC SP on the north side of the Glenvar Road extension, and clear of the Landscape Protection and Enhancement Areas shown on the Landco SP south of the Glenvar Extension Road in catchment 3.

5.6 The Upper Valley

5.6.1 Consideration

[690] In light of our findings on development of Catchments 9A to C we have determined that the Upper Valley should be re-defined for land use strategy purposes as including those catchments, other adjoining land on both sides of the Upper catchment but not Catchment 3. We accept Landco's deletion of the LPA (Enhancement) reference from the strategy as irrelevant in this area as it is not deployed in the Upper Valley.

[691] Land in the Upper Valley is proposed. to be zoned a mix of LB 1A and 1B[1055]. It is subject to a complex pattern of LPA (Conservation) and LPA (Ecological/Stormwater) overlays in both structure plans[1056]. The NSCC LB 1B zone approximates but does not coincide exactly with the LPA overlays. The Landco SP is similar. The Upper Valley has been treated discretely in both proposed structure plans, and the LPA overlays are integral to the implementation of NSCC's proposed Rules 9A.4.1 (Classification of Activities), 9A.4.6.2 (Long Bay 1 Zone: Large Lot Residential) and 9A.4.5.4 (Landscape Protection Area). So this is one place in our Interim Decision where we need to descend to the detail of methods, including rules.

[692] For the ARC Mr Alexander gave helpful evidence about the extent and carrying capacity of the upper valley in the light of the geotechnical evidence[1057]. He first addressed the LB 1B zone and stated "... that there are in the order of 16 house sites in an area of some 65 ha. Averaged over the 1B Zone, this is equivalent to a density of

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1055 Setting aside, for these purposes, the relatively small area of LB 2A zone in the NSCC SP north of the Glenvar Road extension or 'Valley Road'.

1056 Recognising that the Landco SP refers to the latter as Landscape Protection (Enhancement).

1057 Mr Alexander based his assessment on sites being capable of being created and accessed with minor earthworks and either adequately stable or able to be made so economically.

around one site per four hectares"[1058]. Mr Alexander's yield closely approximates that shown on Mr Mead's Exhibit DM15(a). We are concerned that the minimum lot size (5,000 m^2) of the LB 1B Zone will unduly raise expectations. At the least Mr Alexander suggests the subzone strategy should record that the average lot size in the LB 1B Zone is expected to be around four hectares.

[693] Mr Alexander did not investigate the LB 1A in the same manner[1059] but stated:

> Both NSCC and Landco propose densities in the upper catchment west of Glenvar ridge that would inevitably result in a combination of clustering of development in more stable areas and extensive earthworks to provide stable house sites at an acceptable gradient.
>
> It may be possible to find stable building platforms in this area at a density of 2 ha per lot. However on the basis of my assessment I consider that the geotechnical carrying capacity of the land in the upper catchment west of Glenvar ridge is constrained by slope and stability issues such that subdivision down to densities of 2,500m2 to 5,000m2 will require significant enabling site works.

A number of issues emerge from that evidence. Mr Mead's Exhibit DM15(a) indicates that the LB 1A zone is potentially able to generate a much larger number of sites than the LB 1B Zone - possibly in the order of 160 (but not necessarily clustered as Mr Alexander postulated). The Exhibit shows these largely clear of the problematical (in definitional terms) LPAs. Secondly, we share Mr Alexander's apparent unease at the extent of the enabling site works that 160 or so dwellings in the LB 1A zone would require at densities of 2,500 m^2 - 5,000 m^2 per lot and what the cumulative effect of these might be in sedimentation, visual and hydrological (notwithstanding proposed Policy 17B.3.1.1) terms.

[694] We have the following related concerns:

1058 Mr G Alexander, evidence-in-chief para 5.36 ff and Annex GA07 [Environment Court document 45].

1059 Transcript p1383 line 20.

(1) The irregular LPA boundaries and areas that they contain defy accurate definition at the 1: 12,000 scale of the NSCC structure plan map. Implementation of Rule 9A4.6.2(a)(ii) requires precise knowledge of how much of a site is subject to an overlay so landowners can provide the requisite minimum area(s) clear of an "overlay".

(2) The introduction to NSCC 9A.4.5.4 states that "the following [provisions] apply to sites that either contain, or are shown as being linked to a Landscape Protection area in the Plan maps". We do not understand what *"linked to"* means in this context. The term is also used in 9A.4.6.2 Explanations and Reasons. In contrast, NSCC 9A.4.5.4(a) and (b) use "contain" and omit "linked to". Correcting the problem may be as simple as removing "linked to"; but we may not fully understand the potential ramifications of doing so. Relevantly, the Landco structure plan takes the latter course.

(3) NSCC Rule 9A.4.6.2(a)(i) states that "minimum site areas where a site does not contain land identified as Landscape Protection, Area are ..." 2,500 m^2 and 5,000 m^2 in the LB 1A and 1B zones respectively. The Explanation and Reasons commences "The minimum site area of 2 hectares has been applied to the Long Bay 1 zone to .....". The two provisions appear to conflict. Nor do we do not find the latter an appropriate representation of what Rule 9A.4.6.2(a)(ii) sets out in its second paragraph. The Landco SP deals with this aspect more directly by providing a minimum lot size in Rule 9A.4.6.2(a)(i) of 2 hectares.

(4) The effect of NSCC Rule 9A.4.6.2(a)(ii) appears to be that, by way of example, a 4 ha lot subject to a LPA of either relevant type can be subdivided into two 2 ha sites without existing bush being protected or restoration planting being established under Rule 9A.4.5.4. Landco Rule 9A.4.6.1(a)(i) appears to operate in the same manner. We are concerned why this should be so and what implications the rules have for achieving related natural environment objectives.

(5) Unlike the corresponding NSCC provision, Landco Rule 9A.4.6.1(a)(ii) proposes an averaging provision in the LB 1B zone. We understand the LB 1B zone to generally comprise more environmentally sensitive land

than LB 1A and do not have evidence in sight that supports its subdivision into 2,500m^2 lots, albeit subject to averaging.

(6) Our preceding concern is heightened with regards Landco Rule 9A.4.6.1(a)(iii), which concerns land subject to a LPA. It occurs to us that it should be cross-referenced to Landco Rule 9A.4.5.4 in the same manner as the corresponding NSCC Rule.

(7) There are no evident "shape factor", minimum frontage and access rules[1060]. We are concerned this creates the potential for relatively long thin sites, possibly involving extensive earthworks for access purposes. The cross-reference in 9A.4.4.1 to Rule 9.4.4 does not appear to assist. And we recollect Mr Mead's evidence that there should be a 50m minimum frontage in the LB 1 zone fronting Vaughans Road[1061].

(8) The terminology used in NSCC Rule 9A.4.6 is not consistent with the LPA notations on Structure Plan Map: Designations and Special Provisions, but that is easily rectified. The Landco structure plan terminology is better aligned but not entirely consistent.

5.6.2 Singleton land

[695] The Singletons, who own a property at 62 Vaughans Road in the Upper Valley, appealed its zoning and related rules. The site is zoned LB1A and 1B in both structure plans and subject to LPA overlays. A Memorandum and proposed consent order signed by the Singletons, ARC, the Long Bay Society, OEG and the respondent was submitted during the hearing as a basis for settling the appeal. Landco was given leave to withdraw as a section 274 party. Evidence on the appeal was given for NSCC by Ms Davison and by Mr Mead. Counsel for NSCC subsequently provided plans identifying the location of the subject property on relevant structure plan maps. In summary, the proposed consent order provides for amendments to rules, assessment criteria for various controls and the planning maps (both zoning and overlays). The proposed rule changes would apply to all affected parts of the LBSPA including the Upper Valley. The parties elected to submit the proposal prior to our Interim Decision although it was common ground that it would not deal with rules. We defer further consideration of

1060 For example, of the type found in Rules 9.4.5.8 (Residential Zone) and 9.4.7.6 (Rural Zone).
1061 Mr D W A Mead, fifth statement of evidence para 7.7 3rd bullet [Environment Court document 3E].

those matters until a later time. We understand that the proposed amendments to structure plan maps are already depicted on the relevant NSCC structure plan maps July 2007[1062], and that no further or different amendments to the July 2007 maps are proposed. Counsel for NSCC are requested to confirm or correct this understanding.

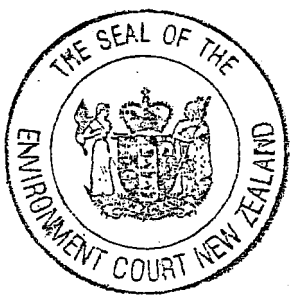
[696] The Singleton land contains a lower sloping terrace zoned as Long Bay 1A on the zoning maps. We struggle to see the justification for that more intensive residential zoning so close to the Vaughans Stream (on a south-facing slope).

5.6.3 Revised strategy for the Upper Valley

[697] We generally endorse the NSCC LB 1A/1B zoning pattern for the enlarged Upper Valley area but we consider it is premature to finally determine the revised strategy for the following reasons:

(a) We have read the plan provisions and have identified earlier some matters which require clarification. We request that the NSCC consult with the other parties:

- On the specific mechanical matters identified earlier in this section, and in particular, definition of the LPAs and the ability of proposed rules to implement related objectives and policies.
- On whether there would be benefits in terms of "certainty of outcome" and ease of administration if the prospective LB 1B sites (and possibly building platforms?) identified in the evidence were to be shown on a structure plan Map. This may circumvent the difficulty we perceive in defining the LPAs in at least one of the large lot residential zones. If the structure plans were amended in this way the activity status of complying subdivision and development might be elevated leaving alternative LB 1B proposals to be assessed as discretionary or non-complying.
- The feasibility of development in the LB 1A zone complying with Policy 17B.3.1.1 and likely visual and/or landscape effects.



1062 Being the Zoning Map [14R], the Designations and Special Provisions Map [15R], and the Land Use Map.

(b) Because the Singleton proposed consent order proposes amendments to rules which we understand apply across the whole of the Upper Valley area we consider it is premature to decide that consent order. We also wish to further consider the proposed zoning change.

[698] Leave for further submissions and evidence on the strategy for the Upper Valley from NSCC, the Singletons and Landco - with leave for other parties to join should they wish - will be reserved.

5.7 Other relevant matters

5.7.1 Implications for urban design

[699] The primary design principles directing any LBSPA structure plan are those in Chapter 17 of the City Plan. We consider that, on the evidence given to us, our judgements in this decision will construct a sufficient framework for the NSCC to give effect to those design principles. Proposed Change 6 to the ARPS encourages use of other urban design principles which were the subject of a great deal of evidence - much of it from Landco's witnesses - which we have barely touched on. That is because we consider the scheme of both the City Plan and of Part 2 of the RMA is that both direct the structure plan to provide a framework for subdivision and development first, and then the urban design can be fitted into that framework.

5.7.2 Yield of residences

[700] We consider that in the context of the LBSPA the question of the ultimate yield of residences is a minor issue. In any event, while we have added buffers - which reduces yield significantly - and confirmed low density residential development in an extended Upper Valley, we have found it appropriate there be more dwellings in other places, for example the lower Awaruku Slopes, the increased height and density around the village centre and the end of Ashley Avenue, and the North Vaughans Living Zone.

5.7.3 Roading

[701] The technical evidence for both NSCC and Landco found the proposed Beach Road extension to be consistent with Plan Change Objective 9A.3.5 which seeks road access to the Awaruku Ridge in a manner that affords a suitable degree of connectivity

with the existing road network. However, as we have held in Part 2 (the Law) of this decision, that is the wrong test. We should rather weigh this aspect of the structure plans against settled provisions in Chapters 17 and 12[1063] of the District Plan and the other statutory matters identified in this decision. We were not assisted by evidence on this aspect. The relevant structure plan Design Principle does not explicitly anticipate Beach Road or any extension. The objective is expressly concerned with avoiding, remedying or mitigating adverse effects of transport "activity" on the natural and physical environment and protecting the amenity value of open space while providing for the enabling aspects of section 5 RMA. We are not certain that a major road on an embankment across the Awaruku wetland and up the slopes of the Ridge involving substantial fill, and at least one very large retaining structure in the case of the NSCC SP, sits comfortably with objective 12.3.1 of the District Plan. We had evidence from residents on the values which they place on the natural resources concerned and some technical evidence on the same matter; albeit less than for the Vaughans catchment. In formulating the directions that follow we have also taken into account:

- That the development potential of the Awaruku Ridge is changed by this Interim Decision. The consequential changes might impact on the proposed road network and, in particular on the need for Beach Road extension.
- There is now an upgraded traffic model available to help develop an improved understanding of the preceding matters.
- Through a process of design refinement it may be possible to re-locate proposed roads on the Awaruku Ridge (without Beach Road extension) in a manner that allows more direct express and local bus routes than the Exhibit IC-9 options and to satisfactorily service potential passenger catchments[1064].
- The evidence that bus services might satisfactorily access Beach Road from Ashley Avenue, Ian Sage Avenue and County Road. There may be other options, possibly including an upgraded Glenvar Road.

1063 Objective 12.3.1 and its policies.

1064 Based on the concepts in Mr I Clark's evidence-in-chief Appendix B [Environment Court document 43].

[702] We direct that in responding to this Interim Decision the parties, led by NSCC, undertake appropriate technical investigations, for example a SATURN model run, to establish whether the revised land use pattern in conjunction with refined Awaruku Ridge proposed road(s) alignments are capable of providing suitable road and bus "connections" to the affected part of the LBSP area without Beach Road extension. NSCC is also to confirm the adequacy or otherwise of a single Vaughans Stream traffic crossing, and to consult with the Ministry of Education to confirm that the Glenvar Road Extension route is available

5.7.4 LBSP Area-Wide and General Matters

[703] There are various other structure plan area-wide matters which we will direct should be provided for in an amended LBSP and plan change. These include:

(1) Stormwater Treatment Train - the plan change is to include the more comprehensive stormwater treatment train proposed in the NSCC SP, including the on-site stormwater mitigation provisions.

(2) Stream Protection Areas - consistent with the direction in point (1) above we find that NSCC's Type A and B Stormwater Protection Areas are to be retained and the A/B line to be relocated to appropriately fit with the amended urban footprint and zonings determined in this Decision.

(3) LPAs - We prefer the NSCC LPA categories and the areas mapped. We find that the Landco method of identifying significant areas, features and characteristics to be consistent with the relevant Tier 3 objectives and policies[1065] and design principles. Where we disagree with the Landco SP is in its identification of the relevant areas, features and characteristics. The NSCC LPA categories and mapping is to be retained and supplemented with listings which more accurately describe the locations and qualities of the mapped areas, and are consistent with the way the NSCC provisions apply.

(4) Long Bay Practice Notes - We note that this is one example of a document which is external to the City Plan but which is referred to in the Plan

[1065] For example Objectives 8.3.2, 8.3.3, 9.3.1 and supporting policies, and Design Principles 17.5.6(8) and 17.5.6(9).

Change 6 provisions. Counsel for NSCC are requested to confirm that the incorporation of any such documents complies with the RMA Schedule 1, Part 3.

(5) Provisions for staging of development may need to be reviewed given that it is a crucial step in moving from the development concept to implementation.

(6) Other Directions - To assist the parties we list here a number of other directions which we have made in earlier parts of this decision:

(a) Control of sediment and area of earthworks - provisions are to include the improved sediment control measures as proposed by Dr Larcombe and to limit the area of earthworks exposed at any one time to a maximum of 30 ha within the whole of the LBSPA regardless of area (refer to Part 3.0 of this decision);

(b) Lizards - provision is to be made to trap and relocate any lizards before works begin in accordance with an approved Environmental Management Plan (refer to Part 3.0 of this decision).

5.7.5 Suggestions about plan provisions to implement the strategy

[704] It is useful at this point to stand back and consider how much of Chapters 9A and 17B are required to implement the structure plan. For example, in Chapter 17B are the following necessary? -

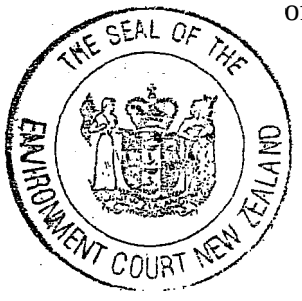
(1) three pages of Introduction;

(2) 13 Design Principles - given the structure plan is now to be formulated largely on the basis of the principles in Chapter 17, specifically 17.5.5 and 17.5.6;

(3) 1.5 pages of Issues - when the structure plan has (now) been formulated to give effect to principles that reflect the Issues and Tier 3 Plan provisions;

(4) all new objectives.

Further we note there is duplication in subject matter as between Chapters 9A and 17B of the Yellow Book and consider that some rationalisation could occur.



[705] We ask, rhetorically, how many layers are required in a district plan? We struggle to imagine the complexity of planning reports and matters to be taken into account on a section 120 appeal if all of Plan Change 6 is retained. In particular we question whether any further objectives will be necessary beyond those in the Land Use Strategy to be finalised. There may, however, be something arising out of Council's Albany and/or Greenhithe structure plan experience which makes the material necessary for processing resource consent applications but it is not apparent to us.

5.8 Directions

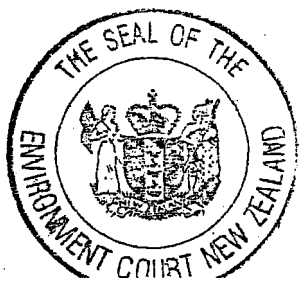
[706] This decision is final in respect of:

(1) our findings of fact;
(2) our statement of the law;
(3) our predictions; and
(4) our judgements as to the strategy (policies) to be followed - subject to any necessary fine tuning of their wording to accord with the spirit and intent of this decision.

It is interim in all other respects because we have not made any judgement as to any further implementing objectives (if necessary), subordinate policies or methods.

[707] Pursuant to section 293 of the RMA, the Court directs that the NSCC:

(1) consult with Landco and the other parties and submit to the Court:
  (a) a draft structure plan Land Use Strategy map giving effect to the findings and judgements in this Interim Decision by 30 November 2008;
  (b) a final version of the Land Use Strategy (17B.1.3) and the Land Use Strategy map by 31 March 2009;
(2) if agreement between the parties cannot be reached on the Land Use Strategy and final Land Use Strategy map, then leave is reserved to the parties to refer any outstanding issues - including any issue about the functionality of the Strategy and implementing map - to the Court, so long



as the issue does not attempt to breach the spirit and intent of this Interim Decision;

(3) after completion of step (1) and, if necessary step (2), the NSCC is to further consult with Landco and the other parties about amending the balance of Plan Change 6 in accordance with:

(a) the spirit and intent of this Interim Decision;

(b) the Land Use Strategy and Land Use Strategy map resolved under (1) and (2) above;

(c) Part 5 of this decision;

(4) if agreement cannot be reached under (3) leave is reserved to apply to the Court for a hearing in respect of those matters;

(5) leave is granted to any party to apply for a conference in respect of outstanding issues with respect to the Upper Valley.

[708] Each party is advised that if it applies on the grounds of functionality for a little 'give' in the decision in one or more places, it will be expected to provide (or reduce) at least an equivalent quality and quantity of environmental compensation elsewhere. That is because this Interim Decision represents our best endeavours to reach an appropriate outcome. Any amendments should not significantly disturb the proportions or weight we have attributed to the various factors to be considered.

Dated at Auckland 16 July 2008

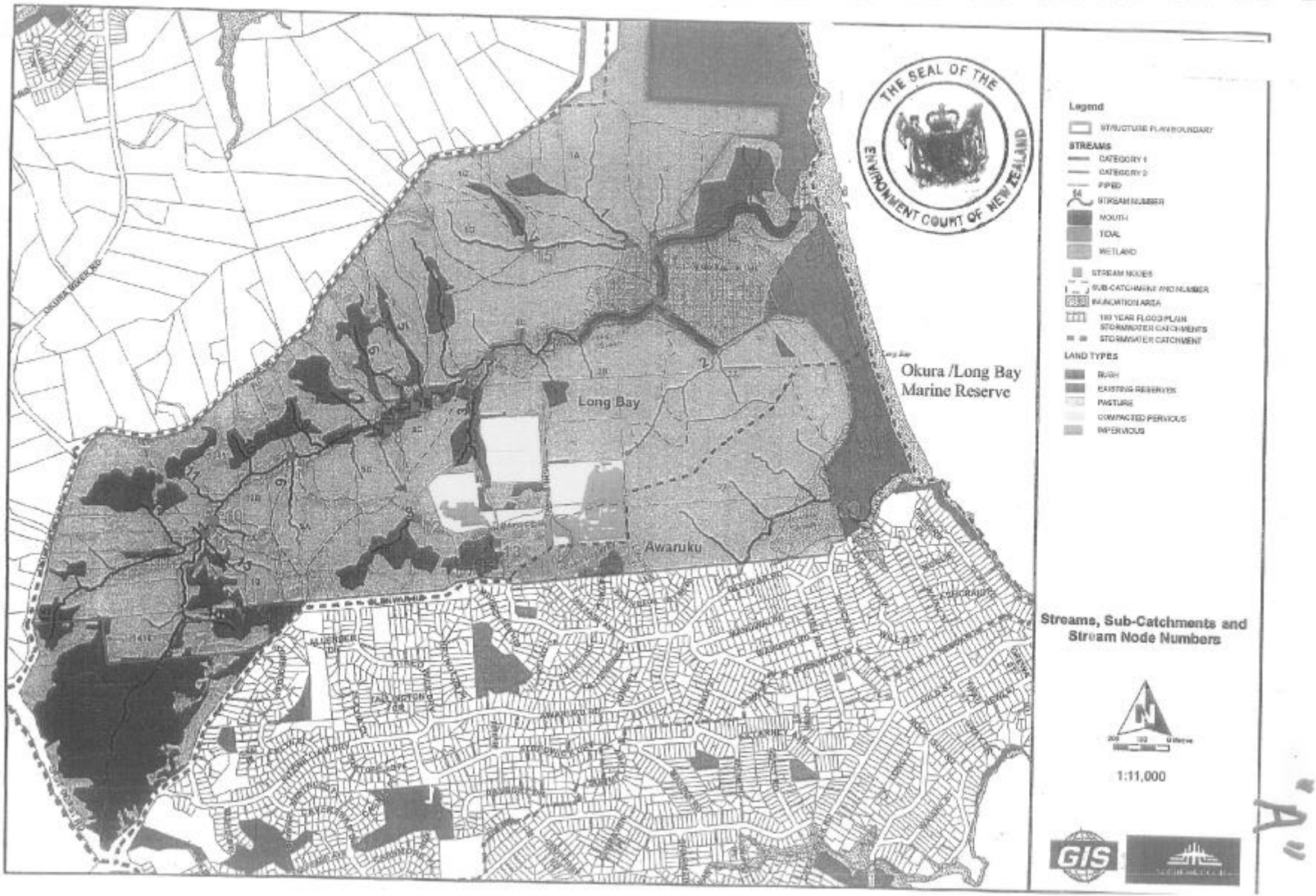
J R Jackson	R M Dunlop	M P Oliver
Environment Judge	Environment Commissioner	Environment Commissioner

Attachments:

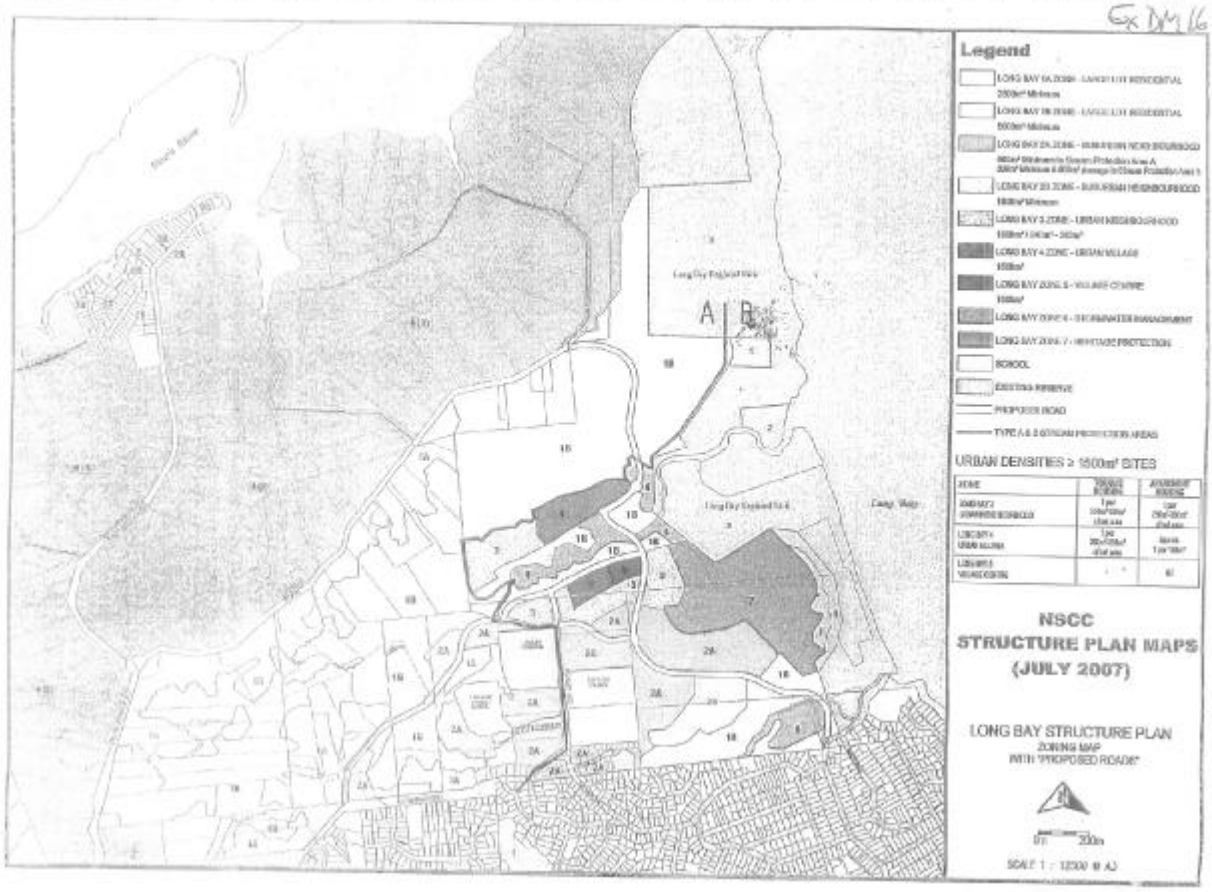
A DK07

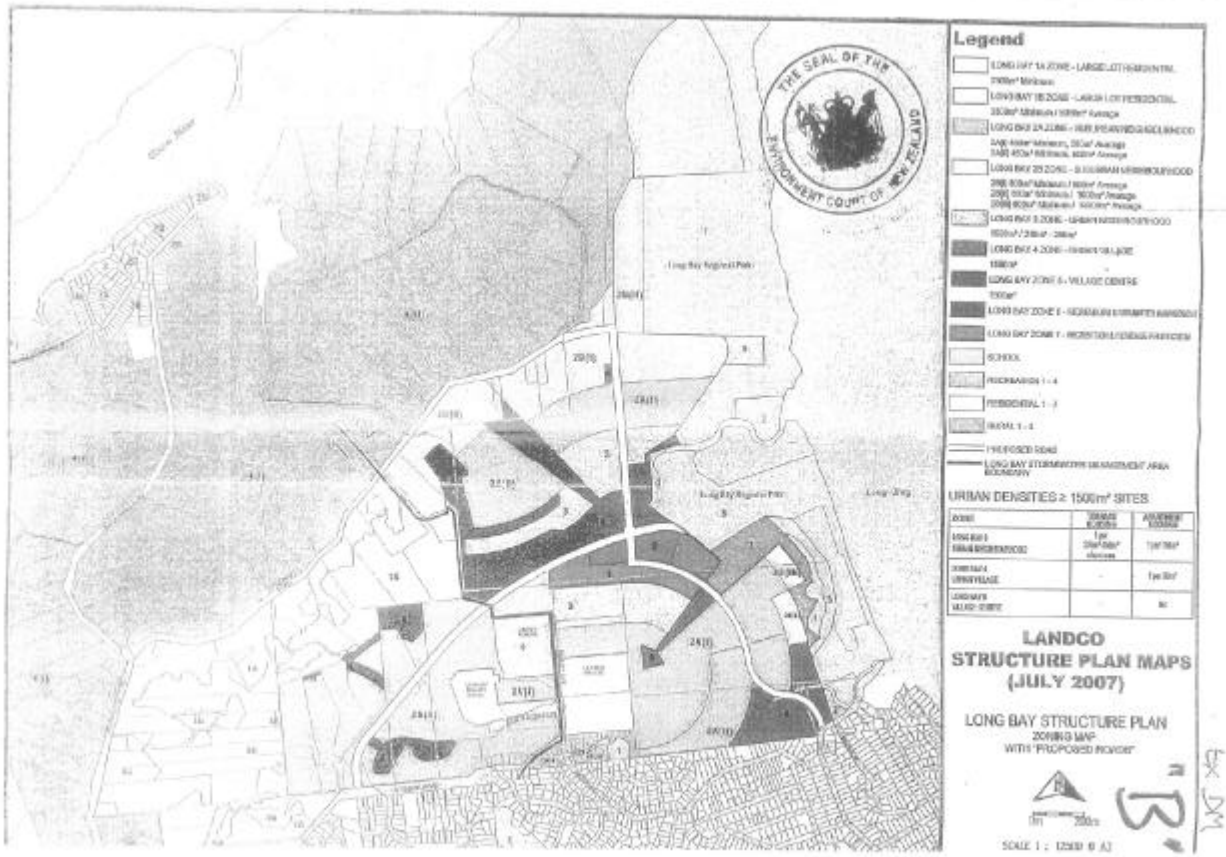
B NSCC and Landco Structure Plan Maps (July 2007), Zoning Map with Proposed Roads.

THE SEAL OF THE ENVIRONMENT COURT NEW ZEALAND


THE SEAL OF THE ENVIRONMENT COURT OF NEW ZEALAND
Okura /Long Bay Marine Reserve
Long Bay
Awaruku
Legend
STRUCTURE PLAN BOUNDARY
STREAMS
CATEGORY 1
CATEGORY 2
PIPED
STREAM NUMBER
MOUTH
TIDAL
WETLAND
STREAM NODES
SUB-CATCHMENT AND NUMBER
INUNDATION AREA
100 YEAR FLOOD PLAIN STORMWATER CATCHMENTS
STORMWATER CATCHMENT
LAND TYPES
BUSH
EXISTING RESERVES
PASTURE
COMPACTED PERVIOUS
IMPERVIOUS
Streams, Sub-Catchments and Stream Node Numbers
1:11,000
GIS

Ex DM 16


Legend
URBAN DENSITIES ≥ 1500m² SITES
NSCC
STRUCTURE PLAN MAPS
(JULY 2007)
LONG BAY STRUCTURE PLAN
ZONING MAP
WITH "PROPOSED ROADS"
SCALE 1 : 12500 @ A3


THE SEAL OF THE ENVIRONMENT COURT OF NEW ZEALAND
Legend
URBAN DENSITIES ≥ 1500m² SITES
LANDCO
STRUCTURE PLAN MAPS
(JULY 2007)
LONG BAY STRUCTURE PLAN
ZONING MAP
WITH "PROPOSED ROADS"
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