**BEFORE THE ENVIRONMENT COURT**
**I MUA I TE KOOTI TAIAO O AOTEAROA**

**Decision No. [2018] NZEnvC 78**

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| IN THE MATTER | of the Resource Management Act 1991 |
| AND | of an appeal under s156 of the Local Government (Auckland Transitional Provisions) Act 2010 |
| BETWEEN | ZHI LI, JING NIU AND WEILI YANG |
| | (ENV-2016-AKL-000196) |
| | Appellants |
| AND | OKURA HOLDINGS LIMITED |
| | (ENV-2016-AKL-000211) |
| | Appellant |
| AND | AUCKLAND COUNCIL |
| | Respondent |
| AND | ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND INCORPORATED and LONG BAY-OKURA GREAT PARK PROTECTION SOCIETY INCORPORATED and OKURA RURAL LANDOWNERS GROUP |
| | Section 274 parties |

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| Court: | Environment Judge BP Dwyer<br>Environment Commissioner RM Bartlett<br>Environment Commissioner DJ Bunting<br>Environment Commissioner RM Dunlop |
| Hearing: | in Auckland<br>18 - 22 September 2017;<br>25 - 29 September 2017; and<br>1 - 3 November 2017. |
| Appearances: | Auckland Council by Ms DK Hartley and Ms AF Buchanan<br>Okura Holdings Limited by Ms SJ Simons and Mr AW Braggins<br>Long Bay-Okura Great Park Protection Society Inc by Mr M Williams<br>Royal Forest and Bird Protection Society of NZ Inc by Ms S Gepp<br>Okura Rural Landowners Group by Mr J Wallman and Ms SA Adams |

Date of Decision: 05 June 2018
Date of Issue: 06 June 2018

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**DECISION OF THE ENVIRONMENT COURT**

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A: Appeals declined

B: Costs reserved

**REASONS**

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**Introduction**

[1] Weili Yang, Zhi Li and Jing Niu (Yang and others) and Okura Holdings Ltd (OHL) have filed appeals pursuant to s 156(1) of the Local Government (Auckland Transitional Provisions) Act 2010 (LGATPA) against decisions of the Auckland Council (the Council) on the proposed Auckland Unitary Plan (the Unitary Plan). Pursuant to s 156(4) LGATPA, the hearing of any such appeal by the Court is treated as if it were a hearing under Clause 15 of Schedule 1, Resource Management Act 1991 (RMA).

[2] The matters which are at issue in both appeals are the position of the Rural Urban Boundary (RUB) near the Okura Estuary (the Estuary) where the Appellants own property and the zonings of their respective properties.

[3] Identification of the RUB is a method contained in Table B 1.6.1 (a provision of the Regional Policy Statement component of the Unitary Plan) intended to address the regionally significant issue of urban growth and form in Auckland. Chapter G1 of the Unitary Plan (part of the District Plan component of the Unitary Plan) states that "the Rural Urban Boundary identifies land potentially suitable for urban development". At Okura the Unitary Plan (as notified) identified the position of the RUB along a ridgeline dividing two catchments. Vaughans Road runs along the ridgeline. Land on the southern side of the ridge/road (the Long Bay catchment) which is already undergoing intensive residential development was included within the RUB. Land on the northern side (the Okura catchment) where the two Appellants' land is situated, was excluded from the RUB thereby signaling that the Council did not regard it as suitable for urban development.

[4] The Independent Hearings Panel (IHP) hearing submissions on the Unitary Plan recommended that at Okura the RUB should be extended northwards to the Estuary's southern shore to include the Appellants' land. The Council did not accept the recommendation of the IHP but rather, determined to retain the Vaughans Road position of the RUB boundary.

[5] Yang and others own land situated at 189 Vaughans Road on the Okura side of the RUB contiguous with the OHL land. They appealed against the Council's decision to reject the IHP's recommendation that the RUB be extended into the Okura catchment and that approximately 20 ha of their land be rezoned to Future Urban

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Zone (FUZ). We will refer to this land as the FUZ land.

[6] OHL owns approximately 130 ha of land (the OHL land/the Site) which falls north from Vaughans Road (55 – 60m AMSL) to the edge of the Estuary. The OHL land is presently subdivided into 29 lots containing at least 4 ha each. OHL appealed against:

- The Council's decision to reject the IHP's recommendation to extend the RUB into the Okura catchment;
- The Council's decision to reject the IHP's recommendation to provide a new precinct with specific provisions applicable for development in that precinct (the Precinct Provisions) for the land owned by OHL in the Okura catchment;
- The Council's decision to reject the IHP's recommendation to rezone the OHL land from Rural - Countryside Living Zone (CLZ) to primarily Residential - Mixed Housing Suburban, a relatively small area of Residential Large Lot, and significant Open Space - Conservation and Open Space - Informal Recreation. The OHL proposal recommended by the IHP would allow urban development to within 70 – 170m of the edge of the Estuary;
- The Council's decision to reject the IHP recommendation in respect of the FUZ land;
- The Council's decision to impose CLZ zoning over the OHL land with a sub-division control providing for a minimum and average net site area of 4 ha.

[7] Although Yang and others had filed a notice of appeal they did not actively participate in these proceedings. Accordingly, we are largely devoid of evidence which might enable us to consider the issue of the appropriate zoning of the FUZ land in any detail.[1] It appears that the IHP similarly had a lack of detailed evidence regarding that land. Notwithstanding the lack of evidence, we think that it is logical that if the RUB is extended to the north as sought by OHL, the extension would incorporate the FUZ land.

[8] Accordingly, in this decision we will concentrate on the OHL appeal. We will

[1] The FUZ land was included in some of the modelling presented in evidence, but no other relevant evidence regarding this land was presented to us.

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commence our considerations with a description of the relevant Okura environment and then provide details of the provisions which OHL contends should be included in the Unitary Plan pertaining to that environment.

[9] The following other parties participated in the hearing of these proceedings:

- Long Bay – Okura Great Park Protection Society (the Society);
- Okura Rural Landowners Group (the Landowners Group);
- Royal Forest and Bird Protection Society of New Zealand (Forest and Bird).

[10] We understood it to be common ground between those parties who appeared before us that resolution of the appeal required us to determine:

- Firstly, whether the RUB should be extended to incorporate the OHL (and FUZ) land;
- Secondly, if the RUB is extended, what the relevant zoning provisions applicable to it should be.

**Okura and the OHL land**

[11] The Estuary is situated on Auckland's eastern shoreline, approximately 20 km north of the CBD. It is the outlet of the Okura River to the Hauraki Gulf. A detailed description of the Okura environment was provided in two Reports presented as part of the case for OHL. These were:

- A Boffa Miskell Ltd Okura RUB Report, 20 November 2015 (the BML Report);
- An Okura Structure Plan Design Report by Studio Pacific, also November 2015 (the SP Report).

The landscape expert witnesses who appeared before us agreed at witness conferencing on 31 May 2017 that the two Reports were useful reference documents for landscape considerations and we concur with that. For the sake of efficiency, we include a description of the OHL land and the surrounding environment contained in the SP Report.

[12] The SP Report includes the following relevant descriptions:[2]

[2] Without the Court necessarily accepting all facts or opinions. Some aspects of the proposal

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## 4. Site Context

### 4.1 Location

The OHL site lies to the north of Auckland and comprises of approximately 130 hectares. The land is held in 26 titles of approximately 4ha each, with an additional 4x4ha lots approved via a 2013 subdivision consent,[3] and is currently open farm land with a network of degraded streams of varying quality and shallow valleys rolling from a ridge line along Vaughans Road down to the coastal edge.

The site is bordered to the north by the Okura Estuary and Scenic Reserve,[4] to the east by Long Bay Regional Park, to the south by Vaughans road, and to the west by existing large lifestyle blocks and Okura Village comprising around 200 houses. The Long Bay development to the south will extend to meet the site at Vaughans Road.

The site presents a number of unique characteristics, opportunities and constraints that are outlined in the following pages of this section.

**4.2** Not included-primarily photographs.

### 4.3 Environmental Conditions

The site is extremely well positioned with generally north facing slopes that overlook the estuary and reserve land adjacent.

The slope of the land generally provides shelter from the prevailing easterly wind and the shallow valley topography provides for a range of desirable aspects.

Geotechnically, the land is suitable for development. The client and civil engineer's combined experience on the adjoining Long Bay development provides a strong understanding of the underlying conditions. Detailed site investigations have further refined an approach to minimize development in geotechnically challenging areas of the site such as steeper valleys and low lying areas.

### 4.4 Local Amenity

The site is bounded on its southern side by the existing RUB but sits within the Auckland Metropolitan area. It is well served in terms of existing roading infrastructure with close connections to the Northern motorway (SH1) and East Coast Road making the site easily accessible.

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evolved between when the SP Report (2015) was written and the hearing.
This gives a total of 30 lots when the actual number is 29. Nothing turns on that.
On the north side of the Estuary.

The development of Long Bay to the south provides sufficient capacity in terms of infrastructure such as roading, wastewater and water to accommodate development at Okura. Likewise, schools and other new community facilities in Long Bay exist to support development at Okura, and a large commercial hub is only 6km away at the Albany Centre.

In terms of open space the site is extremely well served with a number of recreational opportunities right on the doorstep:

- Okura River and direct access to the Hauraki Gulf
- DOC Scenic Reserve [on north bank of the Estuary]
- Dacre Point [on north bank of the Estuary]
- Long Bay Regional Park
- Long Bay Beach

These are discussed further on in this report.

**4.5 History/Archaeology**

A separate archaeological assessment of the site was prepared by Dr Caroline Phillips and informed much of the planning of the coastal edge. This report highlights some of the key findings and their influence on the design.

The site includes a former pa site and number of sites of archaeological importance along the coastal edge that relate to Maori occupation of the land. These archaeological sites are predominantly shell middens and are reflective of a seasonal migration of the wider area by local Maori for fishing, hunting, gathering and gardening. Okura and Long Bay were well known for shark fishing. It is understood that the site would have been used for seasonal occupation or as camp sites rather than permanent places of occupation. Although it is possible that the Pa site may have been of a more permanent nature.

These sites form part of an important story for the cultural landscape and would be protected from development by including them within the coastal reserve. There is a desire that this narrative is integrated into the open space strategy and is appropriately recognised and represented. OHL has engaged with Mana Whenua in relation to the proposal and this will inform how this narrative can be interpreted and integrated into the development, through master planning.

In the mid-late 1850's the land was sub-divided and became available to Pakeha settlers. The Vaughan family arrived in Long Bay in 1863 and set about clearing the land of bush and scrub for farming. The land is still farmed today.

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### 4.6 Marine Reserve

The Long Bay – Okura Marine Reserve surrounds the headland and includes the Okura River encompassing the site's entire coastal edge. This designation has important implications for both the development of (construction), and occupation of the land. The coastal location of the site is one of its main attractions, and the protection and enhancement of this important natural asset is a key driver in the design process.

Opportunities for recreation and environmental protection are presented, whilst constraints are placed on levels of development and construction methodologies. Of equal importance is consideration of managing the quality of water flowing into the reserve to minimize any adverse effects. The Marine Reserve connects the Okura Estuary Scenic Reserve and Long Bay Regional Park, and so all three should be considered as a whole, with the proposed development working to support their environmental and recreational objectives.

### 4.7 Reserves

As well as the Marine Reserve, the site sits in close proximity to two significant areas of Reserve Land.

To the east is Long Bay Regional Park, a significant recreation and open space designation on the coast. There is a strong desire that any development at Okura connects with this park along the coastal edge. OHL has agreed to enable this through the vesting of the coastal edge of the site as reserve land.

Between Long Bay Regional Park and the site an area of Council Reserve forms an important link and provides further potential recreational opportunities.

Opposite the site on the other side of Okura River is the Okura DOC Scenic Reserve. This land consists of kauri and an understory of nikau forest representative of what would have once covered much of the region. As such, it is ecologically important as well as providing visually stunning (and protected) views from the site. It is important that views back across to any proposed development are carefully considered in the context of the bush walk experience offered in the reserve.

It is important that the development of the site and the establishment of an open space strategy is consistent with the region wide thinking and contributes to the recreational diversity and amenity of the area.

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Te Araroa also passes by the site, connecting across the estuary at low tide.

**4.8 Landscape Areas**

Overlaid with the Marine Reserve, Scenic Reserve and Regional Park are two landscape areas of significance:

- The Marine Reserve (including the coastal edge) is designated an area of outstanding natural landscape.
- Parts of the Marine Reserve, the Okura Estuary Scenic Reserve and Long Bay Regional Park are also designated areas of high natural character (refer drawings).

These areas are protected in the Proposed Auckland Unitary Plan through a number of rules and mechanisms to minimize any negative impacts on a number of criteria.

For the purposes of this report it is important to recognize that these inform the opportunities and constraints that are discussed elsewhere in this report – primarily around visual impact and the effect of any development on the physical environment.

[13] The above statement provides a useful background description of the Okura environment. Issues around this environment were debated at length before us and will be the subject of detailed findings elsewhere in this decision. We note that some of the statements contained in the SP Report quoted above are inconsistent with the evidence we heard but we accept the Report as a general description.

**The OHL Proposal**

[14] The outcome sought in this appeal by OHL is that the RUB be extended to incorporate its land which would include (inter alia) predominantly Residential-Mixed Housing Suburban – and a lesser area of Residential-Large Lot zonings, but subject to the Precinct Provisions. The Precinct Provisions would allow for residential development while providing large areas of public open space. OHL has developed a structure plan for the land which underlies the Precinct Provisions it has advanced.

[15] Attached to this decision (Attachment 1) is a plan of the outcome which it seeks being Figure LV4 to the evidence of Ms RV de Lambert (OHL's landscape witness). That outcome was described in these terms by Ms Simons in her

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submissions on behalf of OHL[5] (footnotes excluded):

3.4 This structure plan informed the proposed precinct provisions attached to OHL's submission on the PAUP, which (with a few minor amendments) were included in the IHP's recommendation. The outcome envisaged by OHL will provide for:

(a) An additional 130ha of live zoned land to be included within the Auckland urban area. This land is in single ownership and owned by a developer with a proven track record for producing quality developments. (The adjoining FUZ land, comprising 20ha, cannot be developed unless and until it obtains live zoning through a plan change).

(b) The Site is to be rezoned to provide additional residential land supply (75ha – or approximately 750-1,000 dwellings), and a significant increase to the region's open space network (55ha), providing an efficient land use outcome. Earthworks will only be required for approximately 80 ha of the Site, leaving around 50 ha with its natural contour.

(c) The residential zones proposed would allow primarily for Mixed Housing Suburban ("MHS") with some Large Lot Residential on the western boundary to provide a transition to the adjoining CLZ.

(d) The open space (approximately 42% of the Site) provides for both Public Space-Conservation and Public Space-Informal Recreation zones. The proposed 20ha coastal reserve is far larger than the 20m coastal esplanade normally required (width of 70-170m). The other 35ha is intended to be used for riparian restoration, cycling, pedestrian and ecological linkages, and recreation. The public open space surrounding the main stream corridor is also far wider that the usual 20m riparian yard, ranging in width from 130m to over 200m.

(e) The proposed open space would allow for an extension to the Long Bay Regional Park and a continuous quality walkway around this part of the coast, which is currently lacking. It would also manage as one all sites of value to Mana Whenua recorded on the Site (if vested), thus better meeting statutory requirements compared to the alternative (i.e. if the land were to remain in individual and separate private ownership).

(f) This 55ha of open space would preferably be vested in the Council. However, as noted in Mr Donnelly's evidence, this land could instead be privately owned with provision for public access if the Council does not wish to take responsibility for it.

(g) Retention of all significant indigenous vegetation on the Site and

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[5] OHL Submission at [3.4].

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enhancement through extensive planting of the coastal margin and up to 7ha (10m each side) of riparian planting on the stream margins contained within the Site. Again, single ownership will allow for a cohesive planting plan to be developed along the entire stream system. This level and coordination of planting will not occur if the Council's 4ha CLZ proposal is adopted.

(h) Retention and enhancement of 100% of Permanent Streams, 65% of Intermittent Streams and 50% of Ephemeral Streams, and 312m of stream daylighting.

(i) Urban development and increased housing supply in a sought after and quality environment that is readily serviceable by all necessary infrastructure.

[16] The design imperatives which gave rise to the structure plan and subsequent precinct proposal were described to us in some detail by Mr GN Barratt-Boyes (an architect and urban designer) who was involved in the preparation of the structure plan for OHL. Attachment 1 shows that the development proposed by OHL under the Precinct Provisions will constitute a series of clusters or pods of housing interspersed with open space in gullies. Residential development will be set back from the Estuary by a reserve between 70 and 170 metres wide and will run from there up the open slopes of the OHL land to Vaughans Road.

[17] We will return to a number of aspects of the proposal further in this decision. One matter of initial uncertainty however, arose as to the extent of residential development which might be allowed by application of the Precinct Provisions in conjunction with the wider zone rules:

- In her submissions for OHL Ms Simons said that the proposed development would provide for approximately 750 – 1000 dwellings;
- Mr Barratt-Boyes, using a comparison with the density of development on the adjoining Long Bay development undertaken by OHL, estimated that somewhere between 1,215 and 1,417 dwellings would be established on the OHL and adjoining FUZ land;
- Mr KP Cook (OHL's planning witness) estimated that somewhere between 910 and 1,190 houses might be erected on the OHL land;
- Mr DWA Mead, (the Council's planning witness), using three average lot size scenarios, estimated that somewhere between 942 and 1,480 houses could be established on the OHL land with a further 423 on the FUZ land. This gave an all up total just over 1,900 houses, with a "mid-range estimate" of 1,645 houses;

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We accept Mr Mead's evidence that applying the relevant precinct and wider zone provisions up to 1900 dwellings might be achieved. Mr N Donnelly (General Manager of Resource Management for the Todd Property Group - OHL's owner) seemed to accept that this was "theoretically possible" but that it was "simply not a realistic scenario".[6]

[18] What is apparent to us is that the actual number of houses/dwellings which might be established on the land will depend on a range of variables, many of which lie at the discretion of the developer. Whatever the ultimate numerical outcome is, the OHL proposal enables large scale (75 ha) residential development to take place at Okura with the potential for a further significant increment if the proposed FUZ land was added.

**Considerations**

[19] The hearing of these proceedings took place over a period of 13 days, as well as a further day for our site visit. We received and considered statements of evidence from 49 expert witnesses although not all were required to attend the proceedings and be cross-examined on their statements of evidence.

[20] We will proceed in this decision by identifying a series of issues, which we consider emerge from the evidence. In most cases, the issues raise various sub-issues. We will make a series of findings on the issues which we have identified and then consider those findings in light of the various statutory instruments and provisions which we are required to apply. The issues which we will discuss in detail relate to the following:

- Earthworks and Sediment Discharges;
- Stream Modifications;
- Coastal Sediment Dispersion Modelling;
- Metal Contaminant Discharges and Coastal Dispersion;
- Marine Benthic Ecology;
- Avifauna;
- Freshwater and Terrestrial Ecology;

[6] Donnelly, EIC at [8.17]. (Note: The planners agreed that if the number of dwellings was found to be a factor in ensuring adverse effects were avoided, then a cap on the number of dwellings could be applied in the Precinct Provisions (JWS 7 September 2017 at [2]).

- Water Supply and Wastewater Disposal;
- Traffic and Transportation;
- Economics;
- Natural Character and Landscapes;
- Open Space; and
- Application of Statutory Regime (s.32 and Urban Growth Provisions of the Unitary Plan).

**Earthworks and Sediment Discharges**

*Background*

[21] In this section of our decision we discuss the earthworks proposed to form the building platforms, roads and other infrastructure of the proposed development for the site and the modelling undertaken to estimate the volume of treated and untreated sediment discharges into the Estuary during the land disturbance or construction phase of the Site development.

*The Issues*

[22] We have identified the following issues for our evaluation:

- *Issue 1: What earthworks are proposed and are there any geotechnical or hydrological reasons which could constrain the extent and form of these earthworks?*
- *Issue 2: Will the proposed erosion and sediment control measures achieve the modelled load reduction factors and do the average return interval rainfall events (ARIs) used in the modelling adequately reflect recent rainfall events?*
- *Issue 3: Is it valid to compare the modelled Okura sediment run-offs with actual run-offs recorded at Long Bay?*
- *Issue 4: Have the erosion and sediment control measures proposed for Okura been effective on the adjacent Long Bay site?*
- *Issue 5: Should the earthworks' open area be limited to that modelled with GLEAMS or some higher limit?*
- *Issue 6: If the appeal is successful, should any amendments be made to OHL's proposed Precinct Provisions?*

[23] Because of their inter-connectedness, rather than providing individual findings

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for Issues 2 to 5, we will provide a consolidated finding for these followed by findings for Issue 6.

*The Parties' Positions*

[24] The Society disputed the reliability of the findings of OHL's sediment discharge model. It pointed to the model underestimating the amount of sediment likely to be generated in medium intensity storm events and noted the reliance on an extensive range of assumptions which it said collectively make it impossible to determine reliability.[7]

[25] Forest and Bird said that for a series of reasons the modelling of the sediment yield (and coastal dispersion) most likely provide a limited understanding of what the worst case depositional and suspended conditions in the Estuary might be.[8]

[26] The Council raised concerns about the lack of guidance about how sediment laden runoff from the balance of the land not directed to sediment retention ponds will be managed.[9] It added that there is no objective basis for confirming the 25 hectare earthworking limit given that the NIWA modelling was based on a 20 hectare limit.[10] It also referred to the risk of a sediment retention pond failure leading to the delivery of a slug of sediment into the Estuary during a rain event.

[27] The Council's overall position was that based on the proposed Precinct Provisions, there can be no certainty that the sediment entering the Estuary during the construction phase can be adequately managed.[11]

[28] OHL pointed out that the sediment treatment and control measures proposed during the earthworks go beyond current best practice with a number of redundancies to be built into the system beyond those anticipated by Auckland Council's TP90 and GD05 technical publications.[12]

[29] Even though the construction sediment discharge modelling had assessed

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7 Society Submission at [134].
8 Forest and Bird Submission at [33].
9 Council Submissions in Reply at [3.5].
10 Council Submissions in Reply at [3.8].
11 Council Submissions in Reply at [3.9].
12 OHL Submission at [8.16].

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discharges w*ith treatment* and *without treatment,* OHL said that the findings from the coastal sediment dispersion modelling will be conservative because this has been based on the discharges *without treatment.* In other words, it is not relying on sediment treatment as a pre-requisite for meeting ecological thresholds in the Estuary.[13]

[30] OHL cited a number of reasons in support of its proposed upper limit of 25 hectares for the area of land to be earthworked at any one time as opposed to the 20 hectare limit modelled by NIWA.

[31] OHL's position was that in the longer term its proposed development would result in less sediment being discharged into the Estuary than if the Site was to be developed under the CLZ option.[14]

*The Expert Witnesses*

[32] Evidence on the earthworks and the associated sediment discharges during the formation of the site was provided by:

- Mr M Parsonson (for the Council);
- Mr G Ridley (for OHL);
- Mr A Roa (for the Society);
- Mr M Williams (for OHL).

*Earthworks*

*Issue 1: What earthworks are proposed and are there any geotechnical or hydrological reasons which could constrain the extent and form of these earthworks?*

[33] Reshaping the Site to form building platforms, roads and other infrastructure will involve some 1.3 million $m^3$ of earthworks[15] and require significant modifications and realignments to streams and catchments across the Site. The effects of these changes on the functioning of the streams and their aquatic ecology are discussed in later sections of this decision.

[34] Mr Williams said that while the OHL planning team had considered retaining

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13 OHL Submission at [8.15].
14 OHL Submission at [8.13].
15 We understand that original calculations suggested there might be 1.8 million $m^3$ of earthworks and some witnesses refer to this figure in their evidence which may be quoted below. Nothing turns on that.

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all the streams without modification, ground stability issues (which he said were common in greenfield locations in Auckland's north-eastern bay area) had counted against this unless large areas of the site were quarantined.[16] Even so, following the reshaping of the site, there will be some 55 hectares of open space.

[35] Coffey's Geotechnics(NZ) Limited were engaged by OHL as geotechnical consultants. They advised that, provided there was a structured programme of geotechnical investigations and design, the OHL land was suitable for earthworks and subsequent residential development.[17]

*Findings on Issue 1*

[36] We are not aware of any technical evidence which contradicts that provided by OHL's consultants and find that from an earthworks perspective at least, the Site can be developed in the form proposed by OHL.

*The Modelling*

[37] The sediment load modelling for the construction phase of the proposed development was undertaken by NIWA scientists Yalden and Moores as described in their 2014 report.[18] Neither Ms Yalden nor Mr Moores was called to give evidence at the hearing. Instead, the findings from their report were presented in the evidence of Mr Ridley who told us that he had provided some of the inputs for the model and that he had also reviewed the wider inputs and outputs.

[38] Yalden and Moores used the GLEAMS model for estimating the sediment loads.[19] This model was described as follows:[20]

> *GLEAMS is a physically-based model developed for the continuous simulation of run-off and sediment losses from the site divided into unique combinations of land-cover, soil type and slope. For each combination, GLEAMS applies a long-term climate record (comprising daily rainfall, monthly temperature, wind and solar radiation data) combined with a set of hydrological parameters that describe an arbitrary hill slope (eg slope length, surface roughness) in order to continuously simulate run-off and*

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16 Williams EIC at [3.4].
17 Williams EIC at [4.2]
18 Assessment of Potential Effects of Land Development on Okura Estuary-Estimates of Construction Sediment Loads - NIWA Client Report HAM2014-106-Common Bundle Volume 1-Tab 6.
19 GLEAMS (Groundwater Loading Effects of Agricultural Development Management Systems).
20 Yalden and Moores report Section 3.1.

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*sediment generation.*

...

*Sediment loads for an entire catchment can then be estimated by aggregating the GLEAMS yield according to the area in each combination.*

[39] The output from the model is a 50-year time-series of daily run-off and sediment loads per unit area of each land-cover, soil type and slope combination. The daily load time series is then analysed to calculate the mean annual sediment loads and the one day event loads with and without treatment of the sediment over a range of rainfall average return intervals (ARIs). The model has been used on a number of major projects in the Auckland region including the Waterview motorway connection and the Puhoi to Warkworth motorway.

[40] The 2,257 ha Okura catchment is made up of eight sub-catchments. A second computer model known as WAM-O[21] was used to calculate the existing run-off and sediment loadings from each of these sub-catchments with their existing land cover.

[41] The existing cover on the OHL land where earthworks are proposed is predominantly pastoral with a small amount of bush. At different stages during construction, the cover on these earthwork areas will be exposed soil, mulching or a fully stabilised surface.

[42] The key inputs for the GLEAMS modelling were:

- The climate record used for the Central Waitemata Harbour contaminant study undertaken in 2009 based on 50 years of data (1954-2003);[22]
- ARIs of 2, 5, 10, 20 and 50 years;
- Load reduction factors for the proposed erosion and sediment control measures of 95% for 2 year ARI events, 85% for 10 year ARI events and 65 % for 50 year ARI events;
- Reductions of 85% and 93% from the yields for exposed soil for the mulched and fully stabilised earthwork stages respectively;[23]
- Sediment from 93% of the earthworked areas being treated in sediment ponds with the remaining 7% being treated with measures such as

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21 Yalden and Moores report at [2.2] [2.3].

22 Yalden and Moores report at [3.2.2]. This is a longer record than that used in NIWA's earlier modelling (a 25 year record from 1964-1989) which was referred to in the Council's closing legal submission.

23 Yalden and Moores report at [3.2.1].

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progressive stabilisation, decanting earth bunds, super silt fences and silt fences;[24]

- Subdivision into four earthwork areas totalling 150 ha overlying three sub-catchments including both the 125 ha Site and the adjacent 25 ha of FUZ land;[25]
- Based on the Long Bay development, indicative staging of nine earthworks seasons with overlapping earthworks seasons (four) and civil works seasons (eight);
- A limit of 16ha of earthworks and 3.5 ha of civil works open at any one time (~ 20 ha).

[43] Key outputs from the modelling were:

- *Mean annual* sediment loads with changing land covers for each of the proposed *earthwork areas*, with and without the proposed erosion and sediment control measures;
- *Daily* sediment loads for each of the modelled ARIs with changing land covers for each of the *earthwork areas* with and without the proposed erosion and sediment control measures;
- *Mean annual* run-off and sediment loads with changing land covers for each of the affected *sub-catchments* with and without the proposed erosion and sediment control measures;
- *Daily* sediment loads for each of the modelled ARIs with changing land covers for each of the *sub-catchments* with and without the proposed erosion and sediment control measures.

[44] Key metrics for these outputs were:

- The existing annual sediment yield from the overall Okura catchment is modelled at 2,631 tonnes;
- *Mean annual* sediment loads during the *earthworks' seasons* are predicted to range between 1430% (*Season 4 in area 4*) and 1643% (*Season 1 in area 1*) greater than the existing mean annual sediment loads for these areas *without* erosion and sediment control measures in place and between 32% and 61% greater *with* these measures in place;

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24 Ridley EIC at [2.6].
25 Ridley EIC at [6.5]. Note: Dr Mead gives these areas as 130 ha for OHL and 20 ha for the FUZ land (EIC at [55] and [96]) which is our understanding and the evidence we have accepted.

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- *Mean annual* sediment loads during the *civil works'* seasons are predicted to range between 449% (*Season 8-9 in area 4*) to 496% (*Season 2-3 in area 1*) greater than the existing mean annual sediment loads *without* erosion and sediment control measures in place and between 65% and 70% less than the existing loads *with* these measures in place;
- The proposed erosion and sediment control measures have been designed to reduce the predicted overall mean annual sediment run-off loads in the earthworks and civil works seasons by about 91% and by 95% respectively.

[45] From the GLEAMS modelling, Dr M Green (OHL witness on coastal modelling) adopted the following one day sediment loadings as inputs for his coastal process modelling:[26]

| Scenario | Total One Day Sediment Run-Off (tonnes) | | |
|---|---|---|---|
| | 5 -year ARI | 25 -Year ARI | 100-Year ARI |
| **Whole catchment-existing land-use only** | 1,338 | 2,463 | 3,785 |
| **Whole catchment with treated earthworks** | 1,377 | 2,707 | 5,065 |
| **Whole catchment with untreated earthworks** | 1,712 | 3,340 | 5,519 |

*Issue 2: Will the proposed erosion and sediment control measures achieve the modelled load reduction factors and do the average return interval rainfall events (ARIs) used in the modelling adequately reflect recent rainfall events?*

[46] Mr Ridley was asked whether the erosion and sediment control measures applied in the GLEAMS' modelling had relied on what he described as "over and above" measures which had been installed at Long Bay such as double flocculation sheds and baffles in the sediment retention ponds. He was also asked about the robustness of the load reduction factors included in the modelling for the higher return period rainfalls and the effects of closely spaced storm events.

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26 Assessment of Potential Effect of Land Development on Okura Estuary-Estuary Sediment Transport Modelling-Whole Catchment Sediment Runoff- September 2015 - Common Bundle-Volume 1-Tab 9-Table 2.1. The 5-year ARI event loadings in the table have been taken from Table 3.8 of the Yalden and Moores report. The 25 year ARI and 100 year ARI event loadings in the table are not listed in Table 3.8 but appear consistent with the 20 year and 50 year ARIs which are. The 5 year ARI whole of catchment -existing land use sediment run-off value of 1,377 tonnes in Table 3.8 of this report would appear to be in error. We interpret that the correct value should be 1,338 tonnes as shown in Table 7.1 of the evidence of Dr Green dated 16 August 2017.

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[47] He responded that the GLEAMS modelling had been based on the primary erosion sediment control measures provided for in TP90 and GD05 which were the best practice guidelines for the Auckland region.[27] The modelling did not take account of the "over and above" Long Bay measures.[28]

[48] Mr Parsonson questioned the adequacy of the 10 year ARI event and 50 year ARI event load reduction factors used in the modelling although in doing so he said he was not prepared to suggest alternative values.[29] Mr Ridley told us that these 10 year and 50 year ARI factors had been based on extrapolations from heavily monitored 2 year ARI events and were accepted industry values for the sediment retention ponds proposed for the Site.

[49] There were four 5 year ARI events at neighbouring Long Bay between February and April 2017.[30] Mr Ridley agreed that 5 year ARI rain events following closely behind each other have the potential to impact on the effectiveness of erosion and sediment control systems and could create a "challenging" situation.[31]

[50] Mr Parsonson was asked about the Yalden and Moores report at Table 3.6 where for the worst-case scenario (earthworks area 4 in season 4) the treated daily discharges of sediment were 9 tonnes (2 year ARI); 21 tonnes (5 year ARI); 43 tonnes (10 year ARI), 92 tonnes (20 year ARI) and 260 tonnes (50 year ARI). He agreed that these showed much larger volumes of sediment being discharged in the higher rainfall events with the 50 year event discharge being more than 10 times that of a 5 year event (and by extension, five times more than two 5 year events).[32]

*Issue 3: Is it valid to compare the modelled Okura sediment run-offs with actual run-offs recorded at Long Bay?*

[51] Between February and April 2017 when there were a series of 5 year ARI event rain-falls, one of the ponds at Long Bay captured some 1,210 tonnes of

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27 Auckland Council's Guideline GD05 *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region* published in 2016 updates and replaces Auckland Regional Council Technical Publication Number 90 *Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region* (1999, and 2007 update), known as TP90.

28 NOE at pages 653,654.

29 NOE at pages 5,6.

30 NOE at page 657.

31 NOE at page 659.

32 NOE at page 13.

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sediment with automatic sampling confirming an overall discharge from the ponds of 57 tonnes of sedimentation for this same period.[33] This came from an area of 6ha of exposed earthworks.[34]

[52] Over the time of a specific rain event during this same period on the Long Bay site, a total of some 52 tonnes had been generated from 13 ha of exposed earthworks.[35]

[53] By comparison, for Okura earthworks Area 4 in Season 4, the GLEAMS modelled mean annual sediment load is 566 tonnes with no treatment and 49 tonnes with treatment, for an exposed earthworks area of 20ha.[36] The daily sediment loads ranged from 13 to 21 tonnes for a five-year ARI storm.[37]

[54] Mr Ridley was asked to comment on how the Okura modelling for a 20 ha area appeared to be disproportionately low compared with the actual discharges from the two events recorded at Long Bay where the exposed areas were much smaller. He responded that the Long Bay 52 tonne yield was for a total rain event whereas the Okura estimates were daily figures. He said that events could well extend over more than a day. And the slope classifications for the land surrounding the affected sediment ponds at Long Bay and those modelled at Okura could well have been quite different.

[55] Overall, for these sorts of reasons, he considered that it was not possible to make direct comparisons between actual discharges recorded at Long Bay and those modelled for Okura.[38]

*Issue 4: Have the erosion and sediment control measures proposed for Okura been effective on the adjacent Long Bay site?*

[56] It was common ground that if the OHL appeal succeeds, the Precinct Provisions would require earthworks resource consents and that, if approved, these would be subject to conditions no less stringent than those for Long Bay. The latter includes requirements for on-going Council monitoring by independent experts to

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33 Ridley EIC at [9.6].
34 NOE at page 662.
35 NOE at page 667.
36 Yalden and Moores Table 3.5.
37 NOE at page 665.
38 NOE at page 665.

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check compliance with the erosion and sediment control conditions. These are based on a 4-step scoring system with a score of 1 being full compliance and a score of 2 being for minor non-compliances, examples being a failure to submit an as-built plan or a minor maintenance issue on a silt fence. Steps 3 and 4 are for more serious breaches associated with potential or actual sediment discharges from the site.[39]

[57] If during an inspection one item scored a 2 then the overall score for that inspection was a 2. Likewise, if one item scored a 4 then the overall score for that inspection would be a 4.[40]

[58] The record shows that there were 310 inspection visits undertaken at Long Bay between 2010 and 2016 with 98% of the scores on these visits being 1 or 2, 112 scores of 1 and 190 scores of 2.[41] In Mr Ridley's opinion, it would be unrealistic to expect any site not to get a big percentage of 2's as these are very much in the minor category.[42] Over the seven years there had been seven scores of 3 and one of 4 with the 4 being for an event in 2010 at the start of the earthworks. This event had been self-reported by Todd Property Group.[43] On average there was a score of 3 once a year.[44]

*Issue 5: Should the earthworks' open area be limited to that modelled with GLEAMS or some higher limit?*

[59] Mr Ridley confirmed that an open earthworks area of about 20 ha (16.2 ha of earthworks and 3.5 ha of civil works) had been adopted for the GLEAMS modelling. This was based on a construction programme that had been developed at the time the modelling was undertaken. Nevertheless, he was confident that an exposed area of up to 25 ha allowed for in the proposed Precinct Provisions[45] could be accommodated based on the efficiencies which were being achieved with the equivalent erosion and sediment control measures being used at Long Bay (where the limit is 27 ha).[46]

[60] He said that a managed approach would be to start with an area of 20 hectares

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39 Joint Witness Statement 2-Erosion-31 August 2017 at [2] and [3].
40 NOE at page 682.
41 NOE at page 685.
42 NOE at page 684.
43 NOE at page 687.
44 NOE at page 683.
45 r 1527.6.2(1) Land disturbance activities standard.
46 NOE at pages 651, 652.

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with this to be increased in a step wise fashion using an adaptive monitoring programme based on confirmation that the expected effects envelop was being achieved prior to increases being made.

*Discussion and Findings on Issues 2 to 5*

[61] Mr Ridley confirmed that the GLEAMS' modelling for Okura had been based on the erosion and sediment control measures provided for in TP90 and GD05. These measures did not take account of the "over and above" measures being used at Long Bay.

[62] The 10 year and 50 year ARI event load reduction factors input to the Okura modelling were accepted industry values for the proposed ponds.

[63] Concerns were raised by opposing parties about the effects of two (or more) closely connected 5-year ARI events such as had occurred at Long Bay in 2017. When questioned about this, Mr Parsonson agreed that the volume of the treated daily sediment discharges modelled for Okura for a 50 year ARI event were some 10 times that of a 5-year event, or five times the volume of two 5 year events following in close succession. We note that, even with the lower load reduction factor for a 50 year ARI event, the volume of untreated sediment for a 50 year event should still be less than for two 5 year events.

[64] Our understanding is that the sediment control measures envisaged by OHL for Okura will be very similar to those being used at Long Bay although we note that these have not been *locked in* in the Precinct Provisions and would need to be confirmed through the consenting process. Mr Ridley told us that in the seven years of Council compliance monitoring at Long Bay, there had only been eight breaches classified as serious (a score of 3 or 4) with the only 4 being the previously described event at the start of the earthworks in 2010.

[65] From all of this we accept that the GLEAMS modelling provides a reasonable basis for estimating the sediment volumes to be input to the coastal process modelling. In saying this, we note Dr Green's advice that he has undertaken the coastal process modelling on the very conservative basis of no treatment of the sediments.

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*Issue 6: If the appeal is successful, should any amendments be made to OHL's proposed Precinct Provisions?*

[66] If the appeal was to be upheld, Mr Parsonson was asked if he would recommend any specific amendments to the Precinct Provisions as drafted by OHL to assist with more effective processing of resource consents and improved environmental outcome(s).[47]

[67] Mr Ridley's evidence is that the earthworks should start with a 20 ha exposed limit and if the expected effects envelope was achieved this could be increased incrementally. This approach was of particular concern to Mr Parsonson who suggested that the way in which this limit was set needed to be addressed under a specific provision in the Precinct Provisions. Mr K Cook, who gave planning evidence in support of the OHL appeal, proposed a related amendment to Precinct Rule 1527.6.2 land disturbance activities (Standards), namely:[48]

> A maximum total land area of 25 ha may within the Okura Precinct be exposed at any one time under all live land disturbance consents.

[68] The Precinct Provisions exclude the adjacent 20 hectares which the OHL appeal seeks be included within the RUB and zoned FUZ.[49] We understand absent any related control(s) that the 20 ha could, subject to obtaining a live zoning and necessary resource consents, potentially be developed at the same time as the Precinct.

[69] Mr Parsonson considered that "in principle" the land disturbance chapters of the Plan address all relevant matters of discretion and assessment criteria required for processing Precinct earthworks consent applications. However, when asked whether there were other matters which should be included in the Precinct Provisions to supplement the land disturbance chapters of the Unitary Plan he suggested the following additional matters:[50]

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47 NOE at pages 25-33.
48 Cook EIC Appendix 3 p 6.
49 Mead EIC [55].
50 EIC p 25ff.

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(a) open area staging limits

*Comment:* Mr Parsonson noted that while the OHL sediment yield modelling had been done for approximately 19.6 ha[51] it now proposed the 25 ha exposed limit described above. He explained that setting a limit is complicated. It needs to be practicably achievable having regard to the topography of the land to be worked and strike a balance between minimising the exposed area and total length of exposure. However, given the assumptions used in the OHL modelling Mr Parsonson could not see any basis "at this time" for allowing "more than the normal" 20 hectares.[52] He also acknowledged the incipient complication of how that area might be apportioned between the OHL and FUZ land.[53] The Court is aware a similar issue arose with the neighbouring Long Bay Plan Change and that specific plan provisions were required to deal with it.

(b) winter work restrictions

*Comment:* When asked if there should be a Precinct winter work restrictions' provision Mr Parsonson noted that this was not a matter addressed in the Unitary Plan but that "as an added layer of protection specifying a winter works exclusion period would be appropriate" and this should "identify what works are considered appropriate for the winter period."[54] We apprehend from his answers that consents typically preclude bulk earthworks in the period 1 May – 30 September but civil works may be approved at the discretion of an officer with delegated authority after bulk earthworks have been stabilised.

(c) limit(s) on any earthworks areas not subject to sediment retention pond (SRP) treatment and how these areas should be treated to limit sediment discharges

*Comment:* OHL envisaged that run-off from approximately 7% of the earthworks area will not receive SRP treatment.[55] Mr Parsonson was uncertain about how that figure was derived and its accuracy. He considered that "it would be very appropriate to have a [Precinct] provision, or a rule, that required the area of earthworks [run-off] that is diverted and treated by an SRP to be maximised". He indicated that methods are available for reducing sedimentation from areas that do not receive SRP treatment. For example chemically treated decanting bunds, super silt fences and managing the

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51 EIC p 28.
52 EIC p 28.
53 And any other owner who may subsequently acquire land in the subject area.
54 EIC p 28.
55 EIC p 29ff and Ridley EIC unnumbered drawing in EIC [2.6] p 6.

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timing/staging/duration of works.[56] We understand that Mr Ridley envisaged measures of this type. Mr Parsonson accepted that an explicit requirement for elements such as these could appropriately be included in a Precinct rule.[57]

(d) sediment discharge monitoring

*Comment*: We understood Mr Parsonson to agree that the Precinct Provisions should require "a particular type" of earthworks consent monitoring – especially of potential ecological effects - given the physical nature of the site and its location in the catchment of a Marine Reserve with high natural values.[58] This is consistent with Mr Ridley's emphasis on the importance of monitoring all aspects of an erosion and sediment control system, including for the purpose of continuous improvement.[59]

(e) provision for redundant SRP capacity

*Comment:* Mr Ridley told us that the 3% design criteria used for sizing SRP capacity at the neighbouring Long Bay development would apply at Okura.[60] Mr Parsonson was asked if it would be appropriate for the Precinct Provisions to require a degree of redundancy in SRP capacity above what would normally be required by TP90,[61] to recognise the sensitivity of the receiving environment and risk of adverse effects from rainfall events greater than those used for capacity calculation purposes. Mr Parsonson supported "in principle a potential increase in capacity to some extent".[62] We understand his qualification to reflect the need to take into account the degree to which this could be achieved on every part of the OHL land, which strikes us as both practical and reasonable.

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56 Mr Ridley who was called by OHL to give erosion and sediment control evidence indicated that the adoption of such measures was anticipated in his EIC at [2.6].

57 It is acknowledged that OHL envisaged an approach of this type.

58 EIC p 30.

59 Ridley EIC [2.7].

60 Refer Ridley EIC Section 5 p 9ff where he explains that Long Bay SRPs and decanting earth bunds utilise a 3% volume criteria for all slopes. The 3% criteria relate to 300m$^3$ of SRP volume per 1 ha of contributing catchment. We accept that the 3% criteria would likely apply given proposed OHL Precinct Rule 1527.4: Activity Table, its reference to the applicability of AUP-op Auckland-wide land disturbance Rule E11.6.2(2) and in particular the latter rule's Note 1, which deems TP90 to be *best practice*. The latter includes the 3% criteria amongst its Key Design Criteria at p 101.

61 Mr Parsonson explained that although GD05 is the latest evolution of TP90 the latter remains relevant because GD05 has not been formally adopted by Council. And as noted elsewhere in this Decision, AUP-op Land Disturbance Section E11.6.2(2) states *best practice* is generally deemed to be compliance with TP90.

62 EIC p 31.

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(f) peer review of earthworks' proposals

*Comment:* Mr Parsonson was not persuaded there would be benefit in a peer reviewer or panel working with OHL on the preparation of necessary land disturbance consent applications, should the appeal succeed. His reason being that unlike some other developments, both the Council and OHL have access to well experienced erosion and sediment control professionals making third party involvement unnecessary. That position seemingly assumes continued OHL ownership.

[70] We were materially assisted by Mr Parsonson on these matters and if the court was to uphold the OHL appeal we expect it would be necessary for at least (a) – (e) above to be considered further, with a view to including appropriate Precinct Provisions on each.

*Earthworks and Sediment Discharges: Assessment and findings against Objectives and Policies*

[71] RPS Section B7.4 Coastal water, freshwater and geothermal water has objectives for maintaining water quality that require that the adverse effects of point and non-point discharges, including stormwater, on coastal and freshwater are minimised. Existing adverse effects are to be progressively reduced (Objective B7.4.1(4)). More specifically Policy B7.4.2(8) for sediment runoff is to:

> (8) Minimise the loss of sediment from subdivision, use and development, and manage the discharge of sediment into freshwater and coastal water, by:
>
> (a) promoting the use of soil conservation and management measures to retain soil and sediment on land; and
>
> (b) requiring land disturbing activities to use industry best practice and standards appropriate to the nature and scale of the land disturbing activity and the sensitivity of the receiving environment.

*Comment*: We accept that OHL envisages the application of best practice, leveraging experience gained at Long Bay and recognising the sensitivity of the receiving environment. Whether what OHL envisages would transpire through the consenting process absent more specific Precinct Provisions of the type supported by Mr Parsonson and a different landowner applicant, are debateable questions. The latter is a consideration we cannot discount. It is trite that the Unitary Plan must be framed so that outcomes sought are achieved irrespective of land ownership.

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[72] At the Regional Plan level, Section E11.1 Land disturbance recognises pragmatically that "land disturbance is an essential prerequisite for the development of urban land" and that "the major contaminant of Auckland's urban coastal marine area is sediment generated .... during land development". Even with the use of best practice techniques it is said to be impossible to prevent all sediment entering water bodies.

[73] Objectives E11.2 [rp] are as follows:

(1) Land disturbance is undertaken in a manner that protects the safety of people and avoids, remedies and mitigates adverse effects on the environment.

(2) Sediment generation from land disturbance is minimised.

(3) Land disturbance is controlled to achieve soil conservation.

*Comment:* As previously noted, we accept that the earthworks proposed by OHL are driven, at least in part, by the need to create a stable, safe environment for development[63]. Whether the Precinct Provisions as framed would minimise the sediment generated is uncertain, as is the question of whether the Provisions would sufficiently avoid, remedy or mitigate adverse effects.

[74] There follows Policy E11.3 and its various relevant limbs to the following effect:

(1) Avoid where practicable, and otherwise mitigate, or where appropriate, remedy adverse effects on areas where there are natural and physical resources that have been scheduled in the Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, ... .

*Comment*: As recorded above, scheduled natural resources are potentially affected. It is notable that adverse effects on those resources are to be avoided "where practicable". If the effects cannot be avoided they are to be mitigated or where appropriate remedied. OHL does not propose to avoid the adverse effects of sedimentation but says it would mitigate those effects sufficiently. We have accepted that the GLEAMS sediment runoff projections provide a reasonable basis for understanding likely volumes both without, and more realistically, with treatment. Whether they do so for severe ARI events in close succession, including climate change-induced meteorological conditions, and whether the detention and treatment devices OHL envisages have the capacity to manage such without adverse effects in

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[63] Consistent also with Regional Plan Land Disturbance Policies E11.3(4) and (6).

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a sensitive receiving environment are discussed in the later section of this decision, on coastal modelling.

(2) Manage land disturbance to:

(a) retain soil and sediment on the land by the use of best practicable options for sediment and erosion control appropriate to the nature and scale of the activity;

(b) manage the amount of land being disturbed at any one time, particularly where the soil type, topography and location is likely to result in increased sediment runoff or discharge;

(c) avoid, remedy and mitigate adverse effects on accidentally discovered sensitive material; and

(d) maintain the cultural and spiritual values of Mana Whenua in terms of land and water quality, preservation of wāhi tapu, and kaimoana gathering.

*Comment:* These policy directions are consistent with Mr Parsonson's support for amended and additional Precinct Provisions to secure the application of best practicable options or, in the words of the RPS, "industry best practice and standards" appropriate to the circumstances and receiving environment.

(7) Require any land disturbance that will likely result in the discharge of sediment laden water to ... coastal water to demonstrate that sediment discharge has been minimised to the extent practicable, having regard to the quality of the environment; with:

(a) any significant adverse effects avoided, and other effects avoided, remedied or mitigated, particularly in areas where there is:

(i) high recreational use;

(iii) the collection of fish and shellfish for consumption; or

(v) a downstream receiving environment that is sensitive to sediment accumulation;

(b) adverse effects avoided as far as practicable within areas identified as sensitive because of their ecological values, including terrestrial, freshwater and coastal ecological values; and

(c) the receiving environments ability to assimilate the discharged sediment being taken into account.

*Comment:* The policy has a consenting guide flavour. As such it underscores the need when formulating precinct-specific plan provisions for appropriate policies, rules and related standards. We find this especially so for Okura where the receiving waters comprise scheduled significant natural resources sensitive to sediment

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accumulation, have high natural character, high recreational use and, being degraded, have limited assimilative capacity.

[75] To summarise, we accept with qualifications the GLEAMS model provides a reasonable basis for understanding likely sediment yields and adverse effects from these on potentially impacted natural resources and Mana Whenua values in the Estuary. Evaluation of related Precinct Provisions against the evidence and policy framework has identified the need for strengthened Precinct Provisions to guide subsequent consenting if the appeals were to succeed.

**Stream Modifications**

*Background*

[76] In the preceding section of this decision we discussed the earthworks required to form the building platforms, roads and other infrastructure of the proposed development. This included an evaluation of the modelling undertaken to assess the volumes of sediments which will be discharged into the Estuary during the construction phase.

[77] The earthworks will require significant modifications and realignments to streams and catchments across the site. In this section of our decision we identify the streams which will be affected (which were characterised for the purposes of these proceedings as Types A – C) and the extent of the modifications and realignments proposed. We note that the effects of these modifications and realignments on the aquatic ecology of the streams are discussed in a following section of this decision.

*The Issues*

- *Issue 1: Can the proposed reclamation of the Type B streams at the north-eastern end of the Site be designed and constructed to ensure effective long-term control of erosion?*
- *Issue 2: Will the proposed stream modifications satisfy the relevant provisions of the Unitary Plan and the proposed OHL Precinct Provisions?*

*The Parties' Positions*

[78] The submissions from Forest and Bird and the Society focussed primarily on the ecological effects of the proposed stream modifications as opposed to issues of

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design, constructability and erosion control. Forest and Bird did however comment that the proposed comprehensive large-scale earthworks appeared to respond to OHL's density objectives with little apparent thought having been given to water sensitive design at the master planning stage.[64]

[79] The Council submitted that there were practicable alternatives to the modifications and realignments proposed for the streams. It quoted from Mr N Vigar's evidence that the changes proposed would significantly modify the hydrology on the site and that less invasive approaches were available, an opinion shared by Mr Mead who referred to other developments in the region involving earthworks where stream modifications were either minimal or had been avoided.[65]

[80] OHL submitted that land-form change was necessary to provide stable building platforms.[66] The proposal has attempted to minimise stream loss, support the retention of streams and provide for stream daylighting and riparian revegetation. OHL lists these as outcomes to be achieved as provided for in activity tables, standards, matters of discretion and assessment criteria in the Precinct Provisions.[67]

*Expert Witnesses*

[81] Expert engineering evidence on the stream modification issues was provided by:

- Mr A Roa (for the Society and Forest and Bird);
- Mr N Vigar (for the Council);
- Mr P Wadan (for OHL);
- Mr M Williams (for OHL).

[82] The expert witnesses recorded their agreements and disagreements on a number of infrastructure issues at expert witness conferences held on 6 June 2017 and 22 August 2017.[68] Relevant to the topic of stream modifications were:

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64 Forest and Bird Opening Legal Submission [64].
65 Council Opening Legal Submissions at [13.19].
66 OHL Submission at [12.3].
67 OHL Submission at [12.4].
68 While no date was recorded on the second statement, the schedule in the bundle of joint witness conferencing statements listed the date as 22 August 2017. This was after Mr Williams had prepared his statement of evidence (dated 16 August 2017).

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- Messrs Vigar and Roa said that vertical realignment[69] or regrading of streams should be avoided so that streams retain their connections with the water table and do not pass through compacted fill;
- Messrs Williams and Wadan disagreed. They said that some vertical realignment of streams was necessary for pragmatic development; this needed to be explored by the ecology expert witnesses. The regrading of intermittent streams had lower impacts than regrading permanent streams;
- All agreed that regraded streams would not retain pre-development hydrology and may not retain baseflows that support aquatic systems;
- All agreed that regraded streams pose potential erosion risks which can be mitigated with appropriate design although such measures are not necessarily consistent with a natural stream channel.

[83] Drawing on the evidence of Mr E Sides (an ecologist engaged by OHL) we summarise here the stream modifications required to accommodate the proposed development. The locations and classifications of the streams (permanent, intermittent or ephemeral) are shown on Attachment 1 to Mr Sides' evidence on a plan titled *Okura Stream Management Categories*.[70]

[84] This plan identified three types of stream management and/or modification proposed for the development, Type A streams (to be retained and enhanced, Type B streams (to be modified and enhanced) and Type C streams (to be removed). Significantly, the streams and their respective classifications are also shown in OHL's proposed Okura structure plan with a related policy and rules[71].

[85] In more detail:

*Type A Streams*

- Type A streams comprise combinations of permanent, intermittent and ephemeral streams spread across the Site;[72]
- All permanent streams on the Site totalling some 1,103 m in length are classified as Type A and are to be retained;

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69 The Court understands this to mean reclaiming the stream bed and reconstructing the stream at an higher elevation.
70 Sides EIC at Attachment 1.
71 Okura: precinct plan 1 – Stream Management.
72 Identified on Attachment 1 as Streams 6, 8a,9,10b,10a,12b,17a,20a, 20b,28a,30a,32

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- 1,544m of the total length of 2,378m of intermittent streams are classified as Type A and are to be retained;
- All existing culverts in the Type A streams totalling 312m in length are to be removed and the streams restored.

*Type B Streams*

- All Type B streams which comprise a combination of intermittent and ephemeral streams and a culvert are located within one catchment at the north-eastern end of the Site;
- The total length of the intermittent streams in this catchment is about 530m comprising two sections, one extending for about 220m upstream of a 220m long culvert and the other extending about 90m downstream of the culvert;
- The ephemeral streams total about 100m in length and there is a 10m farm culvert;
- All of the Type B catchment is to be reclaimed;
- Mr Sides' recommendation was that a perched wetland be constructed on top of this reclamation to provide a greater aquatic habitat area than is currently provided by the existing streams.

*Type C Streams*

- Type C streams are shown on as combinations of intermittent and ephemeral streams at various locations across the Site;
- Mr Sides did not provide details of the lengths of these streams but from our rough scaling, their overall length would appear to be about 1,130m, all to be reclaimed.

*Overall Summary*

- All permanent streams are to be retained;
- 834m of intermittent streams are to be removed and 1,544m retained and enhanced;
- 670m of ephemeral streams are to be reclaimed and 655m retained and enhanced;
- In addition to the culverts which are to be daylighted, 76% of the permanent and intermittent streams are to be retained and enhanced;
- The proposed ratio of 2,677m of stream enhancement (a mix of daylighting and riparian planting) to 834m of stream removal is 3.2:1;[73]

[73] We calculate the enhancement length as being 2,647m.

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- This gain to loss would exceed the Auckland average mitigation ratio of 3:1 for the reclamation of permanent streams.[74] We return to the ratio in the freshwater ecology and terrestrial ecology section below.

*Stream Modifications*

[86] Mr Williams said that while the OHL planning team had considered retaining all of the streams on the site without modification, ground stability issues (which he said were common in greenfield locations in Auckland's north-eastern bays area) had counted against this unless large areas of the site were quarantined.[75]

[87] The focus of the engineering evidence was whether the catchment drained by the Type B streams should be retained or, as proposed by OHL, reclaimed and stabilised by infilling the catchment and constructing a drainage swale or as Mr Sides would have it, a wetland, on top of the fill.

[88] Mr Williams' evidence on this was that engineered fill and riparian planting would limit infiltration and erosion and on-site retention/detention would control peak flows.[76] He said that his involvement with similar designs elsewhere (which had been supported by the Council) confirmed his understanding that this proposed reclamation was practically achievable. He said that erosion from such a design would be less than would occur with a natural system.

[89] While Mr Vigar had agreed with the other expert witnesses at the August 2017 expert witness conferencing that the potential erosion risks of regraded streams could be mitigated with appropriate design, he qualified this in his later evidence. He said that a realigned stream would in effect be a steeply graded vegetated swale which would require engineered structures such as rock check dams to control erosion.[77] He said that after a stream had been realigned vertically, it would try to revert to its original natural profile. Stopping this would rely on effective erosion control measures. If these measures were not effective, there would be sediment run-off into the Estuary.[78] He disagreed with Mr Sides' suggestion for a perched artificial wetland to be constructed on top of the reclamation as he said this would receive insufficient

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74 Sides EIC at [4.2 (g) and (h)].
75 Williams EIC at [3.4].
76 Williams EIC at [3.7].
77 Vigar EIC at [11].
78 NOE at page 42.

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water to function.[79]

[90] We note that while a site-wide wetland treatment system for controlling and treating storm-water run-off had been proposed early in the design process, later it was decided to replace this with alternative forms of treatment devices. This is discussed in more detail under contaminant control and treatment in the Metal Contaminant Discharges and Dispersion section of this decision.

*Discussion and Findings*

*Issue 1: Can the proposed reclamation of the Type B streams at the north-eastern end of the Site be designed and constructed to ensure effective long- term control of erosion?*

[91] We note the agreed position of all of the expert witnesses at their joint witness conference that potential erosion risks of the realigned streams can be mitigated with appropriate design.

[92] As indicated, Mr Vigar was concerned that any failure of the erosion control measures proposed would result in sediment being released into the Estuary. Mr Williams' counter to this was that these measures would be a key element of the design and that erosion from a properly engineered system would be less than currently exists.

[93] We accept that, subject to the imposition of appropriate resource consent conditions, the proposed reclamation of the Type B streams can be designed and constructed to control erosion and sediment discharges into the Estuary. Because the stream 23 mouth is inanga habitat this is a significant consideration which if the appeal were to succeed the Court would wish to see addressed in the Precinct Provisions. A significant issue left unresolved was who would be responsible for the ongoing maintenance of the realigned stream system, a consideration which applies to other aspects of the development as well.

*Issue 2: Will the stream modifications proposed comply with the relevant provisions of the Unitary Plan and the Precinct Provisions?*

[94] The proposed modifications are identified in a Stream Management Plan

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[79] Vigar EIC at [10].

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which, suitably amended, is to form part of the Precinct Provisions.[80] In these provisions, the proposed activity status for Stream Management works are set out in *Table I527.4.1 Okura - Precinct Wide: Stream Management.* All Type A stream works are classified as discretionary activities apart from the category of *Depositing any substances for the purposes of habitat enhancement or scientific research* (which is a permitted activity). All Type B stream works are classified as restricted discretionary and all Type C works as permitted activities apart from deposition for habitat enhancement or scientific research, which is a discretionary activity.

[95] The activity statuses described would replace those for streams contained in Unitary Plan Activity Table E3.4 Activity for Lakes, rivers, streams and wetland management.

[96] OHL's proposed relationship between these provisions and those in the Unitary Plan are set out in Precinct Provision *I527.6* which provides that "the overlay, Auckland-wide and underlying zone standards apply to [the Okura] precinct in addition to the following standards". The latter are at section I527.6.3 and apply to:

> Depositing any substance for the purposes of habitat reclamation or scientific research; depositing any substance excluding litter, refuse, other waste, and/or contaminated material; channel clearance more than 100m; diversion of a stream to a new course and new reclamation or drainage of streams.

*Stream Modifications: Assessment against relevant Objectives and Policies*

[97] This section of the decision is primarily a factual description of the stream works proposed by OHL. Our assessment of the works' likely effects on freshwater and terrestrial ecology and congruence with relevant objectives and policies, are primarily in the section on that topic. At this point we note the following high-level Unitary Plan measures include RPS Natural Resources Objectives B7.3.1(1) – (3) Freshwater systems are to enhance degraded freshwater systems, minimize the loss of freshwater systems and to avoid, remedy or mitigate adverse effects of changes in land use on freshwater

*Comment*: The daylighting and restoration of streams proposed including, potentially, riparian planting implement aspects of the Objectives. OHL submits it has minimized the loss of streams consistent with efficient use of the land resource and establishing

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[80] Sides EIC at [4.1] and as contained in the Precinct Activity Table, Standards, RDA matters of discretion and Plan 1 for stream management.

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a stable base for development. In subsequent sections we assess whether in doing so OHL would satisfactorily mitigate residual adverse effects resulting from the stream works.

[98] We also note at RPS level Freshwater systems Policy B7.3.2(4) which is to avoid the permanent loss and significant modification or diversion of streams unless four circumstances can all be met. The Policy expressly excludes ephemeral streams. The four circumstances are:

(a) it is necessary to provide for:
  (i) the health and safety of communities; or
  (ii) the enhancement and restoration of freshwater systems and values; or
  (iii) the sustainable use of land and resources to provide for growth and development; or
  (iv) infrastructure;
(b) no practicable alternative exists;
(c) mitigation measures are implemented to address the adverse effects arising from the loss in freshwater system functions and values; and
(d) where adverse effects cannot be adequately mitigated, environmental benefits including on-site or off-site works are provided

*Comment*: In the Freshwater ecology section below we assess the extent to which (c) and (d) can be met.

**Coastal Sediment Dispersion Modelling**

*Background*

[99] In the Earthworks and Sediment Discharges section of this decision we discussed the GLEAMS' modelling undertaken by Yalden and Moores of NIWA to estimate the volume of treated and untreated sediment discharges into the Estuary from the OHL site during the construction phase of the proposed development.

[100] As well as the GLEAMS' modelling, NIWA was engaged to undertake mathematical modelling of the temporal and spatial distribution of these sediments after they had entered the Estuary.

[101] In this section of our decision we examine the outcomes and likely accuracy of this coastal modelling as a basis for predicting the effects of the resulting suspended and deposited sediments on the Estuary biota and avifauna.

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[102] For ease of reference we repeat here the sediment discharges which were adopted as inputs to the modelling.[81]

| Scenario | Total One Day Sediment Run-Off (tonnes) | | |
|---|---|---|---|
| | 5 -year ARI | 25 -Year ARI | 100-Year ARI |
| **Whole catchment - existing land-use only** | 1,338 | 2,463 | 3,785 |
| **Whole catchment with treated earthworks** | 1,377 | 2,707 | 5,065 |
| **Whole catchment with untreated earthworks** | 1,712 | 3,340 | 5,519 |

*The Parties' Positions*

[103] The Society said that the potential for adverse ecological effects in the coastal area "stands or falls" on the veracity of Dr Green's coastal dispersion model.[82] It considered that there is such an extensive range of assumptions inherent in the model that it is effectively impossible to determine the reliability of the model.

[104] It considered that account should have been undertaken of a broader range of tides, wind directions and repetitive storm events and that the model may not have produced the worst-case scenarios for the outer Estuary sites and in the immediate deposition basins.[83]

[105] Forest and Bird supported the Society's position that the coastal modelling most likely provided only a limited understanding of the worst case depositional and suspended conditions in the Estuary.[84]

[106] The Council was concerned that the coastal modelling did not address long-term cumulative effects over the nine-season construction period. It said that it is counterintuitive that substantial earthworks generating considerable volumes of sediment will not comprise an adverse effect. It added that OHL's modelling was confined to certain locations only and that longer-term effects have not been

81 We understood the modelling to include both the OHL and FUZ land.
82 Society Submissions at [133].
83 Society Submissions at [137] - [139]. (We could not find specific descriptions of the immediate deposition basins in the expert's evidence quoted in this submission).
84 Forest and Bird Submission at [33].

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accounted for including the potential for resuspension of deposited sediments.[85] The Council also pointed out that none of the modelling had taken account of the potential effects of climate change and that the rainfall record adopted for the modelling was well out of date.

[107] OHL said that the findings from its coastal modelling were conservative because these have been based on construction sediment being discharged into the Estuary without treatment. In other words, it was not relying on sediment treatment as a pre-requisite for meeting ecological thresholds in the Estuary.[86] It also defended the criticisms of the other parties that the modelling has not considered closely spaced short term rainfall events. It said that the one-off longer-term ARI events which have been modelled will generate much more sediment than the repeat short term events.[87]

[108] If the Court was minded to allow the appeal, OHL said that the Court would need to be satisfied that the Precinct Provisions were sufficient to adequately manage and control the risks involved.[88]

*The Expert Witnesses*

[109] Expert evidence on coastal modelling was provided by:

- Dr M Green (for OHL);
- Mr S Morgan (for the Society and Forest and Bird);
- Mr J Oldman (for the Council);
- Mr R Reinen-Hamill (for Weiti Development).

(Mr Reinen-Hamill provided evidence and participated in expert witness conferencing. Weiti Development withdrew from the proceedings prior to the commencement of the hearing and we had no regard to Mr Reinen-Hamill's evidence apart from recording below the expert witness conferences which he attended).

[110] The coastal modellers participated in three expert witness conferences, on 6 June 2017 (except for Mr Morgan), 14 June 2017 (Mr Morgan and Dr Green) and 4 September 2017 (all attended).

[111] We set out below in some detail the issues agreed between the expert

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85 Council Closing Submission at [5.6], [5.8] and [5.15].
86 OHL Submission at [9.4].
87 OHL Submission at [9.7].
88 OHL Submission at [9.4].

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witnesses.

[112] At the 6 June 2017 conference, agreements were reached on the following issues:

- The hydrodynamic/sediment transport model was fit for purpose;
- The bathymetric mesh used in the model was up to date;
- There was appropriate calibration of the hydrodynamic component of the model with measurements of water level and current velocity across the Estuary, Karepiro Bay and the adjacent coastal environment;
- There was appropriate calibration of the sediment transport component of the model with measurements of suspended sediment concentration (SSC);
- The modelled attributes of the rate at which suspended sediment clears the water column and the loss of sediment to the coastal environment were appropriate for investigating the dynamics of the sediment dispersal and footprint of sediment discharged from the OHL land;
- The effects of the non-simulation of waves in the modelling would result in:
    - highly conservative estimates of the deposition of sediments on the inter-tidal flats of the outer reaches of the Estuary and in Karepiro Bay;
    - over-estimates of the rate at which suspended sediment clears from the water column;
- Waves, if modelled, would have enhanced the transport of sediments to the upper-reaches of the Estuary and the sub-tidal near shore zone (beyond about 5m deep water);
- Obtaining a better understanding of the connectivity between the Weiti Estuary[89] and the Estuary would have required improved bathymetry for the Weiti Estuary, a broader range of conditions to be modelled, and waves accounted for;
- In the absence of this information, based on the expert witnesses' understanding of estuarine transport, it would be reasonable to assume there is limited connectivity;
- An onshore wind case had not been modelled.

[89] Located to the north of the Okura Estuary and Karepiro Bay where the Wade River discharges south of the Whangaparaoa Peninsula.

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[113] At the 14 June 2017 conference the two attendees (Dr Green and Mr Morgan) agreed that:

- The model simulations had been designed to investigate potential acute effects as opposed to long term chronic effects;
- The model was run for discrete rainfall events only;
- In general, the model correctly depicted the patterns of spatial deposition with the greatest deposition being in the lees of the spit features and in the small side arms and upper reaches of the Estuary and Weiti Estuary with patterns of mangroves being indicative of these areas.

[114] At the 4 September 2017 conference, all four expert witnesses (including Mr Reinen-Hamill) agreed that:

- OHL sediments will be difficult to detect at far-field sites due to natural dispersion;
- The upper part of the Estuary is a significant depositional sink and sediments from the OHL land will deposit in that sink although these would be a small component of the total deposited from other sources in the catchment;
- The model may have underestimated the deposits immediately adjacent to the OHL outfalls in the three depositional basins A, B and C;
- Modelling waves and different winds could change the degree of connectivity although the impacts of OHL sediment in the far field will be limited;
- There will be no large scale or long-term sediment impacts post construction;
- The effects of climate change which have not been accounted for could change the risk profile in an unknown way.

[115] The key points of difference recorded at the September conference were:

- Messrs Oldman and Morgan considered that there was a degree of unquantified risk in that the modelled mean-tide/calm-wind scenario may not have produced worst-case conditions at intermediate-distance seaward sites such as at southern Karepiro Bay and the outer Okura inter-tidal sites;

- Dr Green (and Mr Reinen-Hamill) disagreed with Messrs Oldman and Morgan on the basis that the contribution of the OHL sediments at these sites would be negligible;
- Messrs Oldman and Morgan were concerned that there could be increased inputs of sediment run-off during earthworks on the OHL land (above those modelled) creating a further risk for the intermediate receiving environment and that these had not been quantified;
- Dr Green disagreed with Messrs Oldman and Morgan as he was satisfied that there was considerable conservatism built into the GLEAMS' model used to predict the sediment loads.

[116] The statement from the September conference also recorded that the model had been applied to single day events and that either multiple events over a short duration or lead in or post storm inputs and dynamic events had not been considered.

[117] Dr Green advised during the hearing that on reflection the event modelling record of the September statement was not correct.[90] The statement should have recorded that sediment inputs into the model were for whole events, not just for single days. He said that the method used for generating the sediment loads had been fully described in Section 4 of the Yalden and Moores report.[91] He agreed that dynamic events (more than just a steady wind or interacting events) and multiple events over a short duration had not been modelled.

*Deposition and suspended concentration threshold levels*

[118] In its closing submissions the Council confirmed that the Unitary Plan as notified contained threshold effects levels for sediment quality indicators to apply to coastal zone discharges. The recommendation from the IHP that these be removed was accepted by the Council in its decision on the Unitary Plan.[92]

[119] The Unitary Plan at F2.11.1 includes the statement:

> The Council will work collaboratively with stakeholders to identify additional water quality indicators and guideline values to complement the existing sediment quality threshold effects levels. This would help improve the evaluation of different discharge

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90 NOE at page 702.
91 As discussed in the construction sediment discharge section of this decision.
92 Council Closing Submission at [6.2] – [6.3].

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options through the resource consent process. This will be an interim measure as implementation of the National Policy Statement Freshwater Management 2014 and marine spatial planning is likely to result in additional measures to safeguard the values of coastal receiving environments.

[120] The marine ecologists participated in an expert witness conference on 5 September 2017. In their conferencing statement, they recorded agreements reached on a wide range of issues. Of particular relevance to the coastal modelling, were the deposition and suspended concentration thresholds which should apply for assessing the effects of the sediments entering the Estuary from the OHL development. The ecologists agreed that:

- For sediment deposition, a threshold depth of 3mm should apply with Mr S West noting (and the other expert witnesses acknowledging) that effects could occur below this threshold particularly where there were multiple events in succession;[93]
- For SSCs, the witnesses were agreed on the applicable thresholds but they did not include details of these thresholds in their statement.

[121] The statement recorded that Dr Thrush considered that the SSC models did not run for long enough to which Dr Lohrer responded that the model had been run for the length of time that the SSC remained above the threshold which had never been longer than 10 days.

[122] Later during the hearing Dr Lohrer confirmed that the SSC thresholds were those established by Hewitt *et al.* (2001) and Nicholls *et al.* (2003) as set out in Table 4 of his evidence-in-chief.[94] These were 400mg/L for 8 days, 300 mg/L for 9 days and 80 mg/L for 14 days. He added that the effects on the biota would be no more than minor at these thresholds even though there could be slight changes in their condition which would be difficult to detect from background.[95]

*The Issues*

[123] We have evaluated coastal modelling under a series of issues as follows:

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93 Dr Lohrer at para 3.8 of his EIC notes that this is the depth accumulated on the seabed in the 10 days following the storm.
94 NOE at page 851.
95 NOE at page 852.

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- *Issue 1: What are the likely effects of wave actions and on-shore winds on the re-suspension of deposited sediments and the time taken for the water column to clear following a storm event?*
- *Issue 2: Would a series of smaller rain storms (for example two 5 year ARI storms) following in close succession result in higher suspended sediment concentration levels compared with a 100 year ARI storm?*
- *Issue 3: What are the likely effects of the OHL sediments on more remote receiving environments?*
- *Issue 4: What is the likelihood of developments in the Weiti Estuary / Karepiro Bay affecting sediment loads in the Estuary?*
- *Issue 5: How do the predicted earthworks sediment deposition levels and SSC levels relate to the threshold levels given by Dr Lohrer?*
- *Issue 6: What are the potential long-term depths of sediments deposited in the Estuary from OHL earthworks?*
- *Issue 7: How might the effects of climate change impact on the findings of the coastal modelling?*
- *Issue 8: What is the likelihood that sediment discharges to the Karepiro inter-tidal flats from the Weiti Development (of the type shown in Mr Townend's video played to the Court during the hearing) could be replicated in the Estuary from the OHL sediment discharges?*

[124] We examine each of these in turn.

*Issue 1: What are the likely effects of wave actions and on-shore winds on the re-suspension of deposited sediments and the time taken for the water column to clear following a storm event?*

[125] For ease of reference, we restate here what the expert witnesses agreed about this issue at their 6 June 2017 conference:

- The non-simulation of waves in the modelling would result in:
  - highly conservative[96] estimates of the deposition of sediments on the inter-tidal flats of the outer reaches of the Estuary and in Karepiro Bay;
  - over-estimates of the rate at which suspended sediment clears from the water column;

[96] Which we understood to mean in the sense of potentially overstating.

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- Waves, if modelled, would have enhanced the transport of sediments to the upper-reaches of the Estuary and the sub-tidal near shore zone (beyond about 5m deep water);

from the 14 June 2017 conference:

- While on-shore winds, waves and sequences of rainfall events were not modelled, these would not cause significant changes to the general pattern of deposition.

and from the 4 September 2017 conference:

- Modelling waves and different winds could change the degree of connectivity between the two estuaries although the impacts of OHL sediment in the far field will be limited.

[126] Dr Green said that his modelling had been designed to simulate worst case conditions for the assessment of ecological effects by Dr Lohrer. By not considering waves he said that he had overestimated sediment deposited in the exposed outer reaches of the Estuary where the seabed is sandy and the waves regularly scour the seabed of fine sediment and (relying on Dr Lohrer's evidence) biota are most vulnerable to the effects of deposited sediment.[97]

[127] Conversely, he had most likely underestimated sediment deposition in the sheltered upper reaches of the Estuary where sediment re-suspended from the bed by waves can accumulate but with the bed being muddy (again relying on Dr Lohrer's evidence) biota are least vulnerable to the effects of fine grained sediment (mud).

[128] He added that without waves and in calm wind conditions, the OHL sediment plume would remain relatively intact close to the point of discharge from the OHL land. This would mean an overestimation of deposited sediment in these locations. [98]

[129] Dr Green said that to validate his understanding he had re-run his model under three conditions, with moderate on shore winds, with south-westerly winds and with calm conditions, each superimposed on mean tide. In these runs he had injected only freshwater run-off from the Estuary sub-catchment sources except for the south shore mid-east sub-catchment which lies across the OHL land, where he had included sediment. This enabled the sediment dispersion from this sub-catchment to be

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97 Green EIC at [7.12].
98 Green EIC at [2.26].

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tracked for the three modelled conditions. The model was run for 5, 25 and 100 year ARI storms.[99]

[130] The results of this modelling showed that for larger rainstorms more sediment was retained in the Estuary under on-shore winds compared with calm conditions with the converse applying for smaller rainstorms. While on-shore winds are typically accompanied by rain, off shore (westerly sector) winds generally follow soon after and the waves which accompany on-shore winds flatten very quickly.[100] More sediment is lost to the ocean under the off-shore wind conditions (westerly sector) than in calm conditions and these are very effective at clearing the Estuary of sediments,[101] not just the OHL sediment but also sediment from all other sources.

[131] The consequences of this are that modelling under calm conditions has most likely overestimated the retention of sediment in the Estuary, including the combined background and OHL suspended sediments.

[132] Dr Green agreed that while in some estuaries waves do dominate sediment transport this was not the case at Okura because the entire volume of the Estuary is exchanged with the ocean at every tide. To a large extent, this exchange governs the deposition patterns in the Estuary.

*Finding on Issue 1*

[133] The finding from Dr Green's further modelling of on-shore winds and waves was that under a typical weather pattern of easterly sector winds followed by westerly sector winds and calming of the easterly sector wind induced waves, the resulting calm conditions will produce the most conservative (highest) estimates of retained sediment in the Estuary.

[134] Dr Green's evidence that the most conservative (highest) levels of sediment deposition and suspended concentrations will occur under calm conditions was not challenged.

*Issue 2: Would a series of smaller rain storms (for example two 5 year ARI storms)*

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99 Green EIC at [7.15].

100 Mr Oldman agreed that a 100 year ARI storm would occur in a cyclone from the north which starts with easterly winds, a big rain dump and is followed by westerly winds. (NOE at page 81).

101 Green EIC at [7.19].

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*following in close succession result in higher suspended sediment concentration levels (SSCs) compared with a 100 year ARI storm?*

[135] While Dr Green agreed that the modelling did not include a scenario involving successive storms or a sequence of storm events, he said that a series of closely spaced 5 year ARI storms would still be well below the sediment deposition rates for a 100 year ARI storm. He said that this same outcome would apply for suspended sediments.[102]

[136] The proposition that closely spaced 5 year ARI storms might have higher SSCs than a 100 year ARI storm was put to Mr Oldman. His opinion was that during a larger event there would be more fresh water coming through the system, there would be more flushing and some of the sediment would be flushed out. Conversely, for a series of smaller events the flushing would be less efficient and there would be an additive effect.[103]

[137] Mr Oldman did not attempt to quantify what the different SSC levels between the two scenarios would be whereas Dr Green attempted to do so by undertaking further analysis.

[138] As the modelling showed that the Estuary does not take more than about seven days to completely clear itself of suspended sediment, in his analysis he chose what he said was a conservative 10 day overlap between the start of an event, the end of that event and the start of another event. This was consistent with Dr Lohrer's evidence about the 10 day suspended sediment clearance period.

[139] Dr Green based his analysis on a 25 year rainfall record which formed part of the overall record used in the GLEAMS' modelling.[104] The results of this analysis were that for about 90% of the time of the 25 year record, rainfall events did not overlap. Of the five overlaps that did, three of these were during the earthworks' closure period (from May to September) and four involved only small peak daily loads.[105] All of the overlaps were for less than 1 year ARI storm event.[106] These were not mutually exclusive.

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102 NOE at page 742.
103 NOE at page 80.
104 The 25 year record was from 1964-1989. This formed part of the 50 year record (from 1954-2003) used in the GLEAMS' modelling. (Yalden and Moore Report at [3.2.2]).
105 NOE at page 749.
106 NOE at page 750.

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[140] Dr Green said that the characteristic suspended sediment clearance time of the Estuary was about 7 days or about half of the 80 mg/L threshold level of 14 days. This showed that for suspended sediments, the Estuary essentially resets itself within a week in readiness for the next storm.[107]

[141] In its closing legal submission the Council noted that the rainfall record that Dr Green had used for assessing potential overlaps between storm events was for the period between 1964 and 1989, a time sequence which ended nearly 30 years ago. The submission went on to say that this record did not include more recent rain events and did not consider future climate change scenarios.[108]

[142] In fact, as we have noted in the earlier Earthworks and Sediment Discharges section of this decision, the GLEAMS' modelling report records that while the 1964-1989 record (25 years) had been used in earlier modelling, this had been replaced with a 50 year record (1954-2003) in its updated model. The report also recorded that the longer record did not fundamentally change the likelihood of rainfall events (although we note that the maximum daily rainfall in the longer record was 247.6 mm (input to the updated model) compared with 206.0 mm in the shorter record).[109]

*Finding on Issue 2*

[143] Mr Oldman considered that overlapping 5 year ARI storms could result in higher SSCs in the Estuary than those modelled as a result of the resuspension of sediment between one event and the next.

[144] Dr Green did not agree. He said that there was a very low likelihood of overlapping smaller events and even if there were overlaps, as the characteristic suspended sediment clearance time of the Estuary of about 7 days was about half of the 80 mg/L threshold level of 14 days, there was little likelihood that the threshold SSCs for a 100 year ARI would be exceeded during smaller storm overlaps.

[145] In the construction sediment section of this decision, we noted that a 50 ARI year event sediment discharge would be more than 10 times that of a five year event (and by extension, 5 times more than two five year events).

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107 NOE at page 752.
108 Council Closing Submission at [5.35].
109 Yalden and Moores report at [3.2.2].

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[146] With this large difference, the discharge from a 100 year ARI event being even larger, and a predicted SSC for a 100 year event at 80 mg/L of about 6 days (compared with the threshold of 14 days), we find that the SSCs predicted for a 100 year ARI storm should account for the effects arising from a series of overlapping lower intensity storm events.

[147] We address the Council's response to Dr Green's storm event overlap analysis under Issue 7 on climate change.

*Issue 3: What are the likely effects of the OHL sediments on more remote receiving environments?*

[148] For ease of reference, we repeat here what the expert witnesses agreed/disagreed on at their September 2017 conference:

- Mr Oldman and Mr Morgan considered that there was a degree of unquantified risk in that the modelled mean-tide/calm-wind scenario may not have produced worst-case conditions at intermediate-distance seaward sites such as at southern Karepiro Bay and the outer Okura inter-tidal sites;
- Dr Green (and Mr Reinen-Hamill) disagreed with Mr Oldman and Mr Morgan on the basis that the contribution of the OHL sediments at these sites would be negligible.

[149] In his August evidence, Dr Green elaborated on the reasons for his disagreement. He accepted that OHL sediment having exited the Estuary could deposit in the vicinity of Long Bay under north-easterly winds, that under onshore winds it could reach Karepiro Bay and under southerly winds it could reach the Weiti Estuary and the Whangaparaoa Peninsula.[110]

[150] But, he said that OHL sediments would be only a relatively small proportion of the overall sediments from the Okura catchment.[111] Sediments from Karepiro Bay and the Whangaparaoa Peninsula would also be transported to these far-field receiving environments at the same time as the Okura sediments. The OHL

110 Green EIC at [7.23].

111 By our assessment, drawing on Dr Green's evidence, the volume of treated OHL sediments would be between about 3% and 25% of the overall Okura sediment volumes for the 5 year ARI and 100 year ARI storms.

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sediments would also be widely dispersed and diluted as they were transported to these remoter locations.

*Finding on Issue 3*

[151] We accept Dr Green's evidence that OHL sediments could be expected to have minimal effects on remoter receiving environments.

*Issue 4: What is the likelihood of developments in the Weiti Estuary affecting sediment loads in the Estuary?*

[152] Again, for ease of reference we repeat here what the expert witnesses agreed about this issue at the 6 June 2017 conference:

- Obtaining a better understanding of the connectivity between the Weiti Estuary and the Estuary would have required improved bathymetry for the Weiti Estuary, a broader range of conditions to be modelled, and waves accounted for;
- In the absence of this information, based on the expert witnesses' understanding of estuarine transport, it would be reasonable to assume there is limited connectivity;

[153] Following the June conference, Dr Green said that he modelled two moderate onshore winds to test the connectivity between the Weiti and Okura estuaries. Under calm winds, this modelling established that only 0.24% of the Weiti 100 year ARI storm point source load deposited in the inner Estuary. This increased to 0.41% under north-easterly winds. For easterly winds, the proportion of the Weiti load that deposited in the inner Estuary was 0.17% which was less than in calm wind conditions.[112]

[154] The increase in suspended sediment in the Estuary from Weiti sources was less than 1% of the Weiti sediment deposited on the bed under all wind conditions.[113]

[155] Dr Green was asked whether sediment transported from the off-shore sub-tidal depositional basin to the upper reaches of the Estuary under north-easterly winds would then move back down the Estuary under westerly winds. His response was that once the sediment deposited in the upper reaches of the Estuary, subsequent

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112 Green EIC at [7.28].
113 Green EIC at Table 7-4.

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movement down the Estuary was unlikely as there was little wind fetching there and the sediment would also be bound by the mangroves and microphytobenthos in this location.[114]

*Finding on Issue 4*

[156] Dr Green's further modelling substantiated the expert witnesses' general understanding that it was reasonable to assume that there was limited connectivity between the two estuaries.

[157] Our finding is that that the potential for sediments from developments in the Weiti Estuary affecting sediment loads in the Estuary can be discounted in the modelling.

*Issue 5: How do the predicted sediment deposition levels and SSC levels relate to the threshold levels presented by Dr Lohrer?*

*Sediment Deposition*

[158] Based on Dr Green's modelling, Dr Lohrer produced a series of bar charts plotting the predicted sediment deposition depths at 14 monitoring sites across the estuary.[115]

[159] There were three predicted sediment depths shown for each bar chart at each site, one for background conditions only; one for background conditions plus treated OHL sediments and one for background conditions plus OHL untreated sediments.

[160] Bar charts were prepared for 5 year, 25 year and 100 year ARI storms and for three different sediment particle sizes, 5, 15 and 40 microns.

[161] Dr Lohrer confirmed that sediment deposition was always highest for the 40 micron particle size as these were heavier and settle more quickly. He said that essentially the modelling showed that all particles of this size settle within the confines of the Estuary.[116]

[162] Dr Green said that in the modelling, all of the OHL sediment load had been

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114 NOE at pages 725,726.
115 Lohrer EIC Figs 5,6 and 7.
116 Lohrer EIC at [7.9(b)].

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assumed to be 40 micron particle size for predicting the deposition effects. For the suspended sediment concentrations, all of the load had been assumed to be 5 micron particle size.[117]

[163] The worst-case scenario in terms of short-term deposition is for a 100 year ARI storm with untreated sediment (and a sediment particle size of 40 micron) where the predicted sediment depth is about 0.7 mm. As noted above, the threshold for adverse effects on benthic biota is 3mm.

*SSC Levels*

[164] Based on Dr Green's modelling, Dr Lohrer produced a series of bar charts plotting the predicted SSCs at the 14 monitoring sites across the Estuary.[118]

[165] There were three predicted SSCs shown on the bar chart at each site, one for background conditions only; one for background conditions plus treated OHL sediments and one for background conditions plus untreated OHL sediments.

[166] There were charts for 5 year, 25 year and 100 year ARI storms, each for three different sediment particle sizes, 5, 15 and 40 microns and each for SSC's exceeding 80 mg/L, 310mg/L and 400 mg/L.

[167] Dr Lohrer explained that the 80 mg/L related to the likelihood of adverse effects on pipi, which were reportedly impacted if the SSC remained above this level for more than 14 days or 336 hours and the 400 mg/L related to the likelihood of effects on pipi and cockles which were reportedly impacted if the SSC remained above this level for more than 8 days or 192 hours.

[168] The worst-case scenario was for a 100 year ARI storm with untreated sediment and a sediment particle size of 5 micron (the size of particle which remains in suspension for the longest period of time).

[169] Dr Lohrer's comparisons of the maximum predicted SSCs with the 80 mg/L and 400 mg/L SSC thresholds are shown in the following tables:

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[117] NOE at page 745.
[118] Lohrer EIC Figs 8-15.

| Threshold of 80mg/L for 336 Hours (14 days) | | |
|---|---|---|
| **Most Affected Sites** | **Predicted SSC Following 100 Year ARI Storm** | **Comment** |
| T7, 06, 07,08,09 | Above 80 mg/L for up to 140 hours (about 6 days) | Predicted SSC (140 hours) is 42% of threshold time (336 hours) for negative effects<br>Pipi unlikely at T7, 06, 07 and 08 sites<br>Predicted SSC at sites with pipi (T2 and T4) is 60 hours |
| T11 and T19 | Above 80 mg/L for up to 100 hours (about 4 days) | 30% of time (100 hours) for negative effects |

| Threshold of 400 mg/L for 192 Hours (8 days) | | |
|---|---|---|
| **Most Affected Sites** | **Predicted SSC Following 100 Year ARI Storm** | **Comment** |
| T7, T11, T19 | Above 400mg/L for up to 72 hours (about 3 days) | Predicted SSC (72 hours) is 37.5% of threshold time (192 hours) for negative effects<br>Cockles present in high densities at these sites |

[170] The predicted maximum SSCs for a 5 year ARI storm are 110 hours for the 80mg/L threshold[119] and 38 hours for the 400mg/L threshold[120].

[171] There are quite small differences between the SSCs for the modelled treated and untreated sediment discharge results with the background sediments being dominant in all cases.

*Finding on Issue 5*

[172] The effects of construction sediments discharging from the OHL land on the benthic biota are evaluated in detail in the marine ecology section of this decision.

[173] As inputs to this ecological evaluation, the predicted maximum deposited and SSCs from the untreated earthworks on the OHL land are both well within the

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119 Lohrer EIC Fig 8.
120 Lohrer EIC Fig 10.

threshold levels agreed by the marine ecology expert witnesses.

[174] The predicted maximums are also very conservative as they are based on the sediment discharges from the OHL land being untreated, all of the sediment is assumed to be 40 micron particle size for the prediction of the deposition effects and all of the sediment is assumed to be 5 microns for the prediction of the SSCs.

[175] Given the need for resource consent(s) and OHL's proposal to treat sediment to a high degree, we find it to be implausible that sediment runoff would be discharged untreated unless there was a very significant treatment failure.

*Issue 6: What are the potential long-term depths of sediments deposited in the Estuary from OHL earthworks?*

[176] Dr Green explained where the sediments will end up in the following way. Sediment has a finite settling velocity and will eventually sink to the bed and accumulate in locations where it will not be moved. That is why over the long term, the Okura sediment gets shifted and ends up in one of two depositional sinks, in either the off-shore sink or in the upper reaches of the Estuary. Once settled in the upper Estuary, biological processes take over and the sediment becomes sequestered (or isolated).[121]

[177] In response to concerns raised by Mr Morgan that it was likely that OHL sediment would increase the rate of mangrove expansion and hasten the infilling of the Estuary, Dr Green pointed out that the volumes of the OHL sediments are small relative to the sediment from other sources in the Estuary. Also, the OHL earthworks have a finite life (about 9 years) and once the earthworks have finished, sediment run-off from the OHL land will decrease below the existing levels from the undeveloped site.[122]

*Finding on Issue 6*

[178] We accept that, in the context of the overall sediments which discharge into Estuary, the OHL sediment will be a relatively small component and that once the earthworks have been completed, there will be a reduction in the discharge from the OHL land.

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121 NOE at page 727.
122 Green EIC at [8.5].

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[179] We find that in the long-term, provided controls of the type proposed by OHL are confirmed by resource consents and put in place, there will be negligible depths of sediments deposited in the Estuary attributed to the earthworks' discharges from the OHL land (even with the effects of climate change taken into account (see below)).

*Issue 7: How might the effects of climate change impact on the findings of the coastal modelling?*

[180] At their 4 September 2017 conference, the expert witnesses agreed that:

- The effects of climate change which have not been accounted for could change the risk profile in an unknown way.

[181] Dr Green identified that the effects of climate change on rainfall patterns, intensity of rainstorms and frequency of occurrence were of possible relevance over the timescale of the OHL development but none of these had been taken into consideration in the modelling.[123]

[182] In its closing legal submission, the Council also stated that the rainfall record used for assessing potential overlaps between storm events was the record for the period between 1964 and 1989. In response, we have pointed out that the record adopted for the updated modelling was in fact for the 50 year period from 1954 to 2003.

*Finding on Issue 7*

[183] Under Issue 2 we found that the predicted SSC for a 100 year ARI event was 80 mg/L at about 6 days which was well below the 14 day threshold and that the predicted sediment deposition of 0.7mm compared with the threshold of 3mm for adverse benthic biota effects.

[184] Under Issue 6 we found that the predicted maximum sediment depositions and SSCs were very conservative as they had been based on untreated sediment discharge with the particle size of all of the discharge being set at 40 microns for predicting deposition effects and 5 microns for predicting SSC effects.

[185] The construction period is estimated to be 9 years which is relatively brief in

[123] NOE at page 771.

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the context of potential changes in weather patterns from the effects of climate change.

[186] On the face of it, the overall level of conservatism built into the sediment modelling suggests that the modelled results should accommodate the potential effects of climate change during the construction period of the development as well as any related rainfall events of a magnitude not captured within the pre-2003 record adopted for the modelling.

[187] While we find that there remains a degree of uncertainty about the potential impact of climate change on the results of the sediment dispersion and deposition modelling, we find also that this uncertainty needs to be considered within the context of the sediment discharges which would be generated from the overall catchment of the Estuary under similar conditions.

*Issue 8: What is the likelihood that the sediment discharges to the Karepiro inter-tidal flats from the Weiti Development*[124] *(of the type shown in Mr Townend's video played to the Court during the hearing) could be replicated in the Okura Estuary from the OHL sediment discharges?*

[188] Mr P Townend is the Deputy Convenor of the Society, Chairman of Keep Okura Green and Chairman of Dacre Cottage Management Committee.[125]

[189] In his evidence, Mr Townend included a copy of the Executive Summary from a document titled *Case Study: The Weiti Development.*[126] We have summarised key extracts from this as follows:

> Sediment discharges from the Weiti Development (to the north of the Estuary) into the Karepiro Stream and its tributaries and from there into Karepiro Bay in the Marine Reserve. Monitoring of this discharge by a local environment group has shown high levels of total suspended solids and turbidity concentrations which exceed for more than half the time the maximum guidelines in the *Auckland Council Environmental Monitoring of Streams in the Auckland area.* Deposition of sediment in the inter-tidal area of the Marine Reserve has been observed to have formed layers more than 10mm thick over the sand beach.
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> In late April 2017, the Weiti developer allegedly filled in about 75 metres of the stream,

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124 Located in the catchment immediately north of the Okura Estuary.
125 Townend EIC at [1.2].
126 Townend EIC at [11.12].

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> smothering the salt marsh and blocking the flow of the stream without providing any sediment control systems.
>
> A copy of the consents for the development had been provided to the Society. This did not include any criteria for total suspended solids, turbidity or discharge weights of sediment to the Marine Reserve.

[190] Mr Townend had prepared a short video of the discharges. With the agreement of the parties and the Court, this was screened during the hearing.

[191] Mr Townend was asked by the Court if he was aware of the resource consent conditions for the Weiti development and whether Auckland Council (or its predecessor) had undertaken any enforcement type investigations about the discharge.[127] He responded that he was not familiar with either of these matters (although we note that the case study document referred to above said that consent information had been supplied).

[192] Dr Green said that from what he had seen from the video, sediment from the Weiti Development was discharging in the worst possible way down a small low volume stream and ponding on the low gradient inter-tidal flats in Karepiro Bay. In answer to a question from the Court about whether there were any differences in the way that the OHL sediment would disperse within the Estuary from that shown for Weiti, he said that the big physical difference between the two sites was that, unlike at Karepiro Bay, the OHL sediment would discharge into the main Estuary tidal channel and that this channel conveyed nearly all of the Estuary's tidal prism.[128]

[193] We did not hear any evidence from the Council about this discharge.

*Finding on Issue 8*

[194] If OHL's sediment discharge into the Estuary was predicted to be similar to that shown in Mr Townend's evidence and the images he provided of the Weiti discharge, our finding on OHL's appeal would most likely have been relatively straight forward based on this issue alone.

[195] However, this is not the case and our findings must be based on our evaluation

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127 NOE at page 285.
128 NOE at page 773.

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of the extensive evidence we have been given on the measures and conditions proposed by OHL to control and treat the sediment discharges from the development of its land.

[196] We find for this issue, that apart from noting what appears to be a very unsatisfactory state of affairs with the Weiti discharge, it is outside the scope of this hearing for us to provide any response other than to draw the Council's attention to the information provided by Mr Townend (if it has not responded already).

*Coastal Sediment Dispersion Modelling: Assessment against relevant Objectives and Policies*

[197] The predictions in this section about sediment deposition depths and SSCs are made primarily as a basis for the assessment of likely marine benthic ecology and avifauna effects which follow below. It is instructive, however, to consider the predictions in the context of the RPS B7.4 Coastal water, freshwater and geothermal and the Regional Plan E11 Land disturbance provisions.

[198] Objective B7.4.1(2) provides that the quality of coastal water is to be progressively improved over time where it is degraded. Figure 7.4.2 shows the Estuary as degraded. Policy B7.4.2(1) maintains this stance where it requires integration of the management of development and coastal water by specified means, including:

(c) controlling the use of land and discharges to minimise the adverse effects of runoff on water and progressively reduce existing adverse effects where those water are degraded; and

(d) avoiding development where it will significantly increase adverse effects on water, unless these adverse effects can be adequately mitigated.

[199] The sediment deposition and SSC predictions would not by themselves significantly increase adverse water quality in the Estuary, unless climate change related factors were to take effects beyond the modelled thresholds - for which there is no evidential basis either way. This outcome does not, however, address the policy requirement that degraded water is to be progressively improved over time. On its face, progressive improvement may appear a daunting task but the current appeals afford development options in the Okura catchment - urbanisation or CLZ. We have accepted that on the completion of earthworks the OHL site will discharge less sediment than at present. However, for 9 years it (and we assume the FUZ land for

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an unknown period) would contribute increased sediment to the Estuary contrary to the requirement for progressive improvement. We were not told how much sediment would be discharged by the CLZ option (29 sites) but with access to the sites already constructed expect it would be less than the OHL and FUZ options, certainly during their earthworks phases.

[200] We also note Regional Plan E11 Land Disturbance Policy E11.3 which is to:

> (1) Avoid where practicable, and otherwise mitigate, or where appropriate, remedy adverse effects on areas where there are natural and physical resources that have been scheduled in the Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character.

[201] We ask ourselves whether the Estuary - having degraded water, scheduled natural resources, Mana Whenua significance and Marine Reserve status – might be a location where it is better to seek to remedy adverse effects on water quality by opting for development (CLZ) that contributes a lesser volume of sediment than another option (OHL and FUZ)?

**Metal Contaminant Discharges and Coastal Dispersion**

*Background*

[202] Heavy metal contaminants are a type of stressor which can adversely affect marine biota if the concentrations are high enough.

[203] In this section of our decision we discuss the modelling undertaken to predict the levels of heavy metal contaminants from the developed OHL land depositing in the Estuary sediments; the way in which these contaminants combine with sediments; the relationship between predicted contaminant levels in the Estuary and sediment quality guidelines; and the potential effects of the contaminants on the marine biota in the Estuary.

[204] We have identified the following issues for our evaluation:

- *Issue 1: How reliable is the modelling which was undertaken to predict the levels of heavy metal contamination in the Estuary?*
- *Issue 2: What threshold levels should apply for assessing the effects of heavy metal contamination on the marine ecology of the Estuary?*

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- *Issue 3: How do the predicted heavy metal contamination levels relate to the threshold levels?*

*The Parties' Positions*

[205] The coastal modelling focus of the legal submissions from Forest and Bird and the Society was on the dispersion of the earthworks' sediments. Both had little to say about the heavy metal modelling in their submissions (although Dr Townsend was cross examined by Forest and Bird on the potential effects of the deposits).

[206] The Council noted that the results of the metal accumulation modelling undertaken by Dr Green were based on averages across the receiving basins. While these averages were all within the amber environmental response criteria,[129] the Council submitted that concentration gradients would exist in parts of the depositional basins with the potential for thresholds to be exceeded in these locations particularly for copper.[130]

[207] In its opening legal submission the Council noted that as there was uncertainty about the number of dwellings to be built on the OHL land, there was related uncertainty about the level of the heavy metal contaminant discharges from the developed site. As this was not pursued by the Council in its closing submission, we take it that satisfactory responses had been received on this issue during the course of the hearing.

[208] This same issue was touched on by OHL in its legal submission where it said that the Council's expert witnesses had acknowledged that contaminant levels would not scale linearly with housing density. It added that advances in technology in materials and metals used should see future reductions in metal contaminants and that potential copper contamination could be dealt with through monitoring and risk management tools such as review conditions of consent.[131]

*Expert Witnesses*

[209] The following expert witnesses provided evidence on metal contamination

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129 Put briefly, Dr Townsend describes *amber* as being at a level were contaminant levels are elevated and the biology of the site is possibly impacted.
130 Council Closing Submission at 4.25.
131 OHL Submission at 8.5, 8.6.

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issues:

*Metal contamination modelling*

- Dr M Green (for OHL);
- Mr J Oldman (for the Council);
- Mr R Reinen-Hamill (for Weiti Development).

(As noted earlier, Mr Reinen-Hamill provided evidence and participated in expert witness conferencing. Weiti Development withdrew from the proceedings prior to the commencement of the hearing and we had no regard to Mr Reinen-Hamill's evidence apart from recording below the expert witness conferences which he attended).

*Stormwater treatment*

- Mr A Roa (for Forest and Bird and the Society);
- Mr N Vigar (for the Council);
- Mr P Wadan (for OHL);
- Mr M Williams (for OHL);

*Marine ecology*

- Dr S de Luca (for OHL);
- Dr D Lohrer (for OHL);
- Dr (Professor) S Thrush (for the Council);
- Dr M Townsend (for OHL);
- Mr S West (for the Society).

*Heavy metal contaminant modelling*

[210] Dr Green provided extensive evidence detailing how he had modelled the discharges of heavy metal contaminants from the OHL land post development and the way in which these contaminants would combine with the existing sediments in the Estuary. This evidence was cross-referenced to a series of technical reports included in the common bundle of documents which he had either authored or co-authored. A number of these reports had been prepared as part of the OHL evidence for the earlier IHP hearings.

[211] Dr Green pointed out that since the time of the IHP hearings he had refined his heavy metal contaminant modelling to better reflect a number of input parameters. These included natural sediment contamination levels for zinc and copper based on more accurate measured Okura levels which were lower than those adopted in his earlier modelling. While Dr Green's evidence traced the evolution of his modelling, in

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this decision we have restricted our consideration to the latest results only.

[212] In his evidence Dr Green introduced a relatively new concept which he had developed for determining what he described as being the *equilibrium metal concentration* in the Estuary sediments.

[213] As the Court was left somewhat uncertain as to what was meant by this term, we have delved into the documents contained in the common bundle to assist with an explanation of the concept and how it has been applied.[132]

[214] We record here our understanding.

[215] Sediment on the sea bed is uniformly mixed during the course of each year through a combination of physical and biological processes. The depth of this mixing is described as the *mixing depth*. Typically, this mixing depth is much greater than the thickness of the layer of sediment deposited each year from the surrounding land. This means that at the end of each year there will be a *mixed layer* comprising pre-existing bed sediment and sediment deposited during the year.

[216] At the end of the first year this mixed layer will comprise sediment with metal at the concentration which existed at the start of the year and sediment with metal with a different concentration deposited during the year. The metal concentration in the mixed layer will be somewhere between the two.

[217] At the end of the second year the mixed layer will comprise a mixture of the initial sediment (with its metal concentration), the first year's deposit (with its concentration) and the second year's deposit (with its concentration).

[218] After a number of years, the combined metal concentration in the mixed layer reaches a limit and stabilises. This stable concentration, known as the *equilibrium metal concentration* cannot be exceeded. It is reached sooner under smaller mixing depths as the combined concentration will be dominated by the concentration of the metal in the depositing sediment.

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132 Assessment of Potential Effects of Land Development on Okura Estuary: Updated Predictions of Metal Accumulation in the Estuary-Report TOD1601-1 Prepared for Todd Property Group December 2016. (Common Bundle Vol 2-Tab-17-Page-CB0792).

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*Factors affecting heavy metal concentrations in sediments*

[219] The mixing depth and the sediment deposition rate control the *rate* at which the concentration in the mixed layer approaches the equilibrium metal concentration but neither of these parameters influences the actual value of the equilibrium concentration itself.

[220] The factors which do influence the equilibrium metal concentration are:

- The proportion of the mass of sediment deposited on the seabed each year originating from the developed area;
- The proportion of the catchment metal load (both natural and anthropogenic) which is lost to dissolution in the stormwater runoff;
- The ratio of the annual anthropogenic metal runoff to the annual sediment runoff from the developed area;
- The concentration at which soils in the catchment carry natural metal.

[221] Dr Green has estimated values for each of these factors which he has then used as inputs to an equation which he has developed to determine the equilibrium metal concentration for the seabed sediments across the three depositional basins at the stream mouths into which runoff from the OHL land discharges. The three basins were modelled as one combined unit. The estimated values are:

- The proportion of the mass of sediment deposited on the seabed originating from the developed area compared with the overall catchment lies between 0 and 1 with Dr Green having adopted values between 0.051 to 0.017 for sediment deposition rates varying between 2mm and 6mm per year;[133]
- Assuming the inter-tidal areas in the three depositional basins will be uncovered by the tide for at least half of the time, and with the annual sediment runoff from the OHL developed land being 9,800 kg per year, half of this amount will be deposited on the seabed in the three depositional basins;[134]
- The amount of metal lost to dissolution is zero for both zinc and copper (worst case scenario);
- The anthropogenic metal runoff from the developed land is 5.2kg per year of zinc and 1.0 kg per year of copper;

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[133] The rationale for these values is set out in the TOD1601-1 report at [4.4].
[134] Green EIC at [5.35].

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- The ratio between the annual anthropogenic metal runoff and the annual sediment runoff from the developed area is estimated from a series of equations developed by Dr Green;[135]
- The concentration at which soils in the catchment carry natural metal have been measured at averages of 54 mg/kg for zinc and 11 mg/kg for copper.

[222] The equilibrium metal concentration level in the Estuary sediments will vary depending on the sediment deposition rate with the lowest (and controlling) level being reached when the deposition rate is 2mm per year. For deposition rates higher than 2 mm per year, the level would be correspondingly higher.

[223] At the controlling 2 mm per year rate, the modelling shows that the equilibrium metal concentration level in the sediments would be reached at an anthropogenic zinc run-off level of 13.5 kg per year. This compares with the actual run-off level of 5.2 kg per year which means that 2.6 times the actual run-off level would be required before the equilibrium concentration level concentration for zinc was reached (and, as discussed below, for the zinc amber threshold of 124 mg/kg to be reached).

[224] At the same controlling 2 mm per year sediment deposition rate, the lowest equilibrium metal concentration level for copper would be reached if there was 1.5 kg per year of anthropogenic copper run off from the developed land. As the actual copper run-off level is only 1.0 kg per year, 1.5 times this amount would be required before the equilibrium copper concentration reached the equilibrium level (and, as discussed below, for the copper amber threshold of 19 mg/kg to be reached).

*Issue 1: How reliable is the modelling which was undertaken to predict the levels of heavy metal contamination in the Estuary?*

*The Model*

[225] In their joint witness statement of 6 June 2017 Mr Oldman, Dr Green (and Mr Reinen-Hamill) recorded the following agreements about Dr Green's metal accumulation model. These were that:

- The metal equilibrium model is fit for purpose;

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[135] These equations are set out in the TOD1601-1 report at [4.5].

- Sensitivity has been adequately explored;
- The concept of equilibrium metal concentration is legitimate;
- It is reasonable to accept that 50% of the sediment/metal run-off from the OHL land will deposit across the three depositional basins below this land;
- Over the long term, metal concentrations beyond the depositional basins will be very minor;
- The dissolution factor for zinc adopted by Dr Green in his model was contrary to experimental evidence and the equilibrium zinc concentration should be recalculated with a more appropriate dissolution factor as this will result in a lower equilibrium zinc concentration level.[136]

[226] Dr Green responded to the issue of the zinc dissolution factor by noting that, disregarding the findings of the experimental evidence and assuming zero loss of zinc to a dissolved phase is very conservative. Had he allowed for greater dissolution, the equilibrium concentration would have been lower.[137] This was confirmed in the third joint witness statement of 4 September 2017 where the expert witnesses agreed that the metal accumulation model was fit for purpose.[138]

[227] Mr Oldman's opinion was that because of the high proportion of zinc that will be lost to the dissolved phase, the predicted level of zinc in the depositional basins is unlikely to exceed the sediment quality guidelines.[139]

[228] While agreeing that the metal accumulation model was fit for purpose, Mr Oldman said that in his opinion the assumptions used in the modelling exercise would not result in the worst-case estimates of copper accumulation in the combined depositional basins. For instance, he said that if the deposits were not spread evenly across the depositional basin, there would be higher concentrations in the areas where the OHL sediments are directly deposited.[140]

[229] He added that avoiding exceedances of metal thresholds relies on the

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136 The focus of the evidence was on the effects of heavy metal contaminants on the biota in the estuary sediments. We are not aware of any concerns being raised about the effects of dissolved metals in the estuary waters.

137 Green EIC at [5.31].

138 First conference of coastal modelling and processes Expert Witnesses-6 June 2017-Tab 5 of joint witness statements and third conference -4 Sept 2017-Tab 18 of joint witness statements.

139 Oldman Rebuttal at [30].

140 Oldman Rebuttal at [19] [20].

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adequacy of the sediment mixing process and that treatment of metals at source is now a favoured option for the Council as this removes the uncertainty in predicting how metals will actually accumulate in the long term.[141]

[230] While the predictions of the metal accumulation in the sediments had been based on a spatially averaged model, Dr Green agreed that there would be some areas of the seabed with concentrations above the average and some below but that the differences would be small.[142] He pointed out that the stream(s) from the OHL land run unimpeded across the three basins to connect up with the main sub-tidal channel and that if he had thought that there was a significant depositional gradient (which he did not) he would have broken the area up into a series of basins for modelling.[143]

*Stormwater Treatment*

[231] The land based metal contaminant modelling undertaken by NIWA in November 2014 was based on stormwater run-offs being treated in three wetlands.[144]

[232] Mr Williams confirmed that while the initial design proposals for stormwater and contaminant control were based on this wetland treatment system, this was not now encouraged by the Council if other solutions were available.[145] He described various *treatment at source* systems which included non-contaminating roofing materials, roadside rain gardens, and re-use rain tanks. He said that at Long Bay, these types of devices were used to treat stormwater run-offs from impervious road surfaces before they discharged through the reticulated stormwater network to large wetlands and then into the stream network.

[233] Mr Williams said that it was now proposed that these more recent types of stormwater treatment were to be used at Okura.[146]

[234] This change of treatment approach was picked up by Mr Wadan who confirmed that the proposed development would be based on the adoption of *at*

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141 Oldman Rebuttal at [23].
142 NOE at page 718.
143 NOE at page 719.
144 Assessment of Potential Effects of Land Development on Okura Estuary: Urban Contaminant Modelling: November 2014 at [4.2].
145 Williams EIC at [3.11].
146 Williams EIC at [7.3].

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*source* stormwater treatment devices and that online ponds and wetlands would be avoided.[147]

[235] The adoption of these treatment devices to TP10 standards was agreed to at the expert witness conferencing except by Mr Roa who considered that device sizing in excess of TP10 should be considered.[148] Mr Wadan said that TP10 was the industry standard technical guideline for the design of the devices and that GD04, the guideline document for water sensitive design (WSD) referenced TP10 as the best practice guideline. He advised that WSD aims to keep post development stormwater run-off out of receiving waters entirely thereby reducing pollutant loads and effects such as channel erosion of the receiving waters.[149]

[236] Dr Green said that while his contamination model had been based on the originally proposed three end of pipe wetlands (one for each stream), based on his understanding that *at source* treatment was now preferred, this would reduce metal loads to at least the level achievable by the end of pipe wetlands - and potentially better.

[237] The use of high contaminant yielding building materials for dwellings such as zinc and copper is classified as a non-complying activity in Table I527.4.1 of the Precinct Provisions - although the reason why that this was restricted to dwellings was not explained.

[238] Apart from a reference in Policy I527.3 (3), which requires "appropriate at-source controls" we could find no specific details in the Precinct Provisions as to what those controls might be and how they might align with what Mr Wadan supported.

[239] Counsel for OHL suggested to Mr Oldman that future potential reductions in the copper content of vehicle brake pads (a primary source of copper contaminants) would reduce the copper runoff from the OHL site. In the absence of any substantive evidence on the point, we have given little weight to this.

*Findings on Issue 1*

[240] Our findings on the reliability of the heavy metal contamination modelling are:

147 Wadan EIC at [2.8]-[2.11].
148 Wadan EIC at [2.9].
149 Wadan EIC at [2.10].

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- The model and the modelling undertaken by Dr Green were fit for purpose;
- OHL has decided to change the land based treatment system from the "three wetlands" modelled by NIWA, to an "at source" WSD system - although this remains subject to resource consenting;
- While there has been no detailed metal contamination modelling undertaken based on the WSD treatment system which was now proposed, we accept that if adopted, this system would provide an equivalent degree of treatment (or better) to the wetlands' treatment system relied on by Dr Green in the metal contaminant modelling.

*Issue 2: What threshold levels should apply for assessing the effects of heavy metal contamination on the marine ecology of the Estuary?*

[241] As previously noted, the Unitary Plan at F2.11.1 includes the statement ... "The Council will work collaboratively with stakeholders to identify additional water quality indicators and guideline values to complement the existing sediment quality threshold effects levels. This will help improve the evaluation of different discharge options through the resource consent process. This will be an interim measure as implementation of the National Policy Statement for Freshwater Management 2014 and marine spatial planning is likely to result in additional measures to safeguard the values of coastal receiving environments."

[242] Dr Townsend described a number of sediment quality guidelines which establish threshold levels for assessing the adverse effects of heavy metal concentrations in marine sediments. These are:

- Auckland Regional Council (ARC) *Environmental Response Criteria (ERC)* sediment contaminant guidelines[150] which are set at relatively low levels to allow timely responses well ahead of any serious degradation occurring. Dr Townsend also refers to these as having been developed by the Council[151]. While it is not entirely clear whether these are the guidelines which are referred to in F2.11.1 of the AUP, it would seem that they are;

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150 Townsend EIC at [5.6].
151 Townsend EIC at [2.4].

- The Florida Department of Environmental Protection guidelines[152] which define a *Threshold Effects Level* (TEL) below which adverse effects are unlikely and a *Probable Effects Level* (PEL) above which adverse effects are predicted to occur frequently;
- The National Oceanic and Atmospheric Administration guidelines[153] which are based on an *Effects Range Low* (ERL), a concentration at which 10% of toxicity studies showed no effect, and an *Effects Range Median*, a concentration at which 50% of toxicity studies show an adverse effect;[154]
- The ANZECC (2000) Interim Sediment Quality Guidelines (ISQG) for Australia and New Zealand which are set at levels which are more stringent than the other guidelines. [155]

[243] The ERC guideline criteria cover ranges identified as green, amber and red. Sites within the green range present a low risk to biology; within the amber range, elevated contaminant levels have possible impacts on the biology; and within the red range, high contaminant levels have a high probability of impact on the biology. The ERC criteria are not pass-fail numbers but rather triggers for further investigation. Keeping metal concentrations within the green range should avoid adverse environmental effects.[156]

[244] In terms of metrics, the ERC amber threshold level for zinc is 124 mg/kg and the amber threshold level for copper is 19 mg/kg.

*Finding on Issue 2*

[245] We respond to these sediment contaminant guidelines in our finding on Issue 3 below.

*Issue 3: How do the predicted heavy metal contamination levels relate to the threshold levels?*

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152 Reported on by Macdonald et al (1996).
153 Reported by Long et al (1995)
154 We suspect that the wording "..a concentration at which 10% of toxicity studies showed no effect,.." should be worded "...a concentration at which only 10% of toxicity studies showed an effect,..".
155 Dr Townsend said that these are the closest New Zealand has to a national guideline. Townsend EIC footnote to [5.5].
156 Townsend EIC at [5.7] – [5.8].

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[246] Dr Green had prepared two tables, one for zinc and one for copper. These set out for each metal over the range of sediment deposition rates modelled (2mm to 6mm) the proportion of the mass of sediments deposited across the combined depositional basins, and estimated total metal concentrations for zinc and copper over time. For both metals, no sediment quality guideline threshold is exceeded by projected OHL discharges over a period of 100 years. As Dr Green pointed out, this is because the equilibrium metal concentrations for both zinc and copper are both well below the amber thresholds and therefore the rate of metal accumulation and the time in the future when the thresholds are exceeded become irrelevant.[157]

[247] Dr Townsend confirmed that based on Dr Green's modelling, no sediment quality guideline threshold (ERC, TEL, ERL, PEL and ISQG-Low) will be exceeded within 100 years and the equilibrium concentrations from the OHL site will all be well below the sediment quality guideline thresholds.[158]

*Benthic Health Model*

[248] Dr Townsend was questioned by counsel for Forest and Bird about studies that have documented changes to macrofaunal community composition at concentrations below the threshold guidelines.[159]

[249] In response, Dr Townsend referred to what is known as the benthic health model developed by Auckland Regional Council, NIWA and Auckland University in the early 2000's (we understand to determine the health of macrofaunal communities relative to storm-water contaminants).[160] This model is based on a combined gradient of heavy metals using multi-variant analysis for detecting effects based on all of the species present within a benthic community at a particular site.

[250] During the development of the model, species and contaminant studies were undertaken in the East Coast Bays, Waitematā Harbour and Manukau Harbour over a range of sites varying from highly contaminated to clean. A total of up to 100 different species were identified across all of these sites.

[251] This information was entered into a benthic health model to develop a

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157 Green EIC at [2.14].
158 Townsend EIC at [6.5].
159 NOE at page 866-868.
160 Exhibit 23 at [2.5.1].

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contaminant gradient which varied from a score of minus 2.5 to a score of plus 2.5, from sites with the least level of contamination (associated with zinc, copper and lead) to those with the most contaminants. Scores between plus 1 to minus 2.5 are identified as being below the (ERC amber) metal contaminant guideline threshold with the cleanest sites having a score of minus 2.5 and those at the threshold level a score of plus 1.

[252] The evaluation of those sites not included in the study (which include the Estuary) would involve the identification of animals at the site leading to the assignment of a score within the range of the heavy metal contaminant gradient.

[253] From investigations undertaken at the Estuary, the background score has been estimated at minus 0.62. Following development of the OHL land, this score is predicted to increase to minus 0.42. Dr Townend says this is a relatively small change and it would be difficult to detect differences in the benthic community structure between this score and the background score. While there might be slight increases or decreases in one or two species, these would be very difficult to measure and in any case the changes would not affect the functioning of the ecosystem.[161]

*Findings on Issue 3*

[254] The evidence of Dr Townsend and Dr Green was that the metal equilibrium guideline thresholds - in particular the existing ERC guideline levels – will not be exceeded[162] and we accept this evidence.

[255] Dr Townsend's further evidence was that it would be difficult to detect differences in the benthic community structure from the effects of metal contaminants in the Estuary.

[256] We conclude this section by noting that the findings in this section on metal contaminant modelling should not be read in isolation but in the wider context of the findings set out in the Marine Ecology section of this decision.

161 NOE at page 871.
162 Townsend EIC at [6.5].

*Metal Contaminant Discharges and Dispersion: Assessment against Relevant Objectives and Policies*

[257] The Unitary Plan records that good water underpins the ecological health and life-supporting capacity of the marine environment. Depending on concentrations, heavy metals of the type modelled by OHL can have a significant effect on ecological values and coastal habitats. Sensitive receiving environments with high recreational and ecological values such as estuaries are affected by discharges, particularly from urbanised areas. Most harbour areas in Auckland including the Estuary have been identified in RPS Figure 7.4.2 as being degraded through a combination of urban and rural land-use activities and discharges[163].

[258] The Unitary Plan provisions that follow are potentially relevant to both sediment and heavy metal discharges.

[259] Regional Coastal Plan F2.11.2 Objectives include:

(1) Water and sediment quality in the coastal marine area is maintained where it is excellent or good and progressively improved over time in degraded areas.

(2) The life-supporting capacity and resources of the Hauraki Gulf, are protected and, where appropriate, enhanced.

*Comment*: The Unitary Plan records that degraded water areas have been identified based on assessments of water quality, sediment contamination and benthic health. We do not know in which of these categories, or combination of categories, the Estuary was assessed as degraded. The minus 0.62 benthic health model score reported by OHL indicates that heavy metal contaminants are presently below the ERC amber threshold. That is, it is within the range of +1 to -2.5. Post development the score is predicted to increase to -0.42 which is still well below the amber level range. On this parameter, sediment quality, as measured by metal contaminants, might be considered "*good*" in terms of Objective F2.11.2(1) and therefore is to be maintained. The Unitary Plan records that "There is evidence that even moderate levels of degradation can result in ecosystem level changes, and it is not yet known how reversible these changes might be".[164] The direction in Objective F2.11.2(2) to protect the life-supporting capacity and resources of the Estuary and, where appropriate, to enhance them is unequivocal.

163 Unitary Plan F2.11.1 Discharges background.
164 RPS, B7.7 Explanation and principal reasons for adoption p 13.

[260] The objectives are to be implemented through multiple policies with different foci. Relevant are F2.11.3:

> (1) Avoid the discharge of contaminants where it will result in significant modification of, or damage to any areas identified as having significant values.

*Comment:* While the Estuary has significant values, which we describe in greater detail below, we have not found that heavy metals would be discharged at concentrations sufficient to cause significant modifications to marine benthic ecology. It strikes us that this is a different test from "protect" and "enhance" where appropriate in Objective F2.11.2(2).

> (2) Require any proposal to discharge contaminants or water into the coastal marine area to adopt the best practicable option to prevent or minimise adverse effects on the environment, having regard to all of the following:
>
> (c) whether the receiving environment has the capacity to assimilate the discharged contaminants after reasonable mixing, particularly within areas identified as degraded or having significant ecological value;
>
> (d) the extent to which present or foreseeable future adverse effects have been avoided, remedied or mitigated on:
>
> (i) areas of high recreational use;
>
> (e) high ecological values.

*Comment:* While possibly formulated to guide consent decision-making, OHL might reasonably point to its stated intention to adopt WSD methods as the best practicable option to manage metal contaminants in stormwater run-off. We assess whether the latter, at the levels predicted, would prevent or minimise adverse ecological effects in a subsequent section but note the particular need to achieve one of these outcomes where the receiving environment is degraded and has significant ecological values.[165] The requirement that future adverse effects be avoided, remedied or mitigated on areas of high recreational use is also apposite given the evidence of lay persons who clearly make considerable use of the Estuary and value its natural resources highly. If any related adverse effects are not avoided, we find it hard to envisage how they might be meaningfully mitigated or remedied.

> (5) Encourage source control of contaminants, through the management of land use and discharges, as a method to prevent or minimise contaminant generation and

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165 rp/rcp Objective E1.2(3) Water quality and integrated management similarly provides for stormwater to be managed … to prevent or minimise adverse effects of contaminants on coastal water quality.

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discharge to coastal receiving environments, where source contaminant control devices and methods can practicably be installed and maintained on an ongoing basis.

*Comment*: As noted above OHL can reasonably point in this respect to its intention to adopt Council's WSD approaches.

[261] We also note at this juncture Coastal Environment Policy B8.3.2 use and development which we return to below. The policy is to:

(5) Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown or little understood, but could be significantly adverse.

and

(6) Consider the purposes for which land or water in the coastal environment is held or managed under any enactment for conservation or protection purposes and:
  (a) avoid adverse effects that are significant in relation to those purposes; and
  (b) avoid, remedy or mitigate other adverse effects in relation to those purposes.

*Comment:* as traversed during the hearing, this policy applies to the Long Bay-Okura Marine Reserve within which the Estuary is located.

**Marine Benthic Ecology**

*Background*

[262] In earlier sections of this decision we made findings on the outcomes of the modelling undertaken which:

- Predicted the levels of treated and untreated sediments which would discharge into the Estuary during OHL's earthworks;
- Predicted the deposition depths and SSC in the Estuary which would result from these sediment discharges;
- Predicted the levels of anthropogenic heavy metal contaminants (zinc and copper) which would discharge into the Estuary from the completed development;
- Predicted the metal contaminant levels in the Estuary sediments which would result from the metal discharges.

[263] In this section of our decision we assess the nature and likely severity of the

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effects of these discharges on the marine benthic ecology of the Estuary all in the context of the Estuary forming part of a Marine Reserve, the presence of a number of significant ecological areas (SEAs) identified in Schedule 4 of the Unitary Plan and the presence of various benthic habitats.

[264] Dr Townsend described the Marine Reserve in the following way:

> **The Long Bay – Okura Marine Reserve**
> This reserve was established in 1995 and covers 980 ha, extending north-east from Toroa Point to a small headland in Karepiro Bay and includes all of Okura Estuary and the inner shallow part of Karepiro Bay. Fishing and collecting of shellfish are prohibited in the reserve. The statutory purpose of the reserve is "*to preserve, for scientific study of marine life of such distinctive quality or so typical or beautiful or unique that their continued preservation is in the national interest*" (Marine Reserves Act 1971). The Act states that Marine Reserves should be preserved as far as possible in their natural state and the marine life of the reserves protected as far as possible[166].

[265] Overlay DM04C provided by the Council's planner Mr Mead described the three SEAs:[167]

> **Significant Ecological Area – SEA M1 64a Marine 1n**
> Intertidal: Within this area are a considerable variety of intertidal substrates which together form a complex array of habitats which support a variety of animal and plant communities. The communities living on the wave-cut platforms, cliffs, and beaches at Long Bay have been studied over a long period and are in reasonably good condition. This is a known location of pingao, a threatened plant of mobile sand areas. The intertidal areas within the Okura Estuary and outside its entrance range from fine mud to sand and are used as a feeding ground by several hundred wading birds. Many of these birds roost on the sandy area at the entrance to the Estuary at high tide. A variety of other coastal birds feed and roost within this area. Areas of saltmarsh and mangrove line the estuary and are used by banded rail, a threatened secretive coastal fringe bird. The adjoining terrestrial vegetation which provided shelter for the birds and offers potential nesting sites. This saline vegetation and other intertidal areas grade into coastal pohutukawa forest on sheltered cliffs, then into taraire forest on coastal hill country, and finally into kanuka forest on a headland. Both of the latter are considered to be the best examples of their types in the ecological district. At Karepiro Creek, the marine environment grades into significant

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166 Townsend EIC page 5.
167 Note that even though there is a lot of repetition, each has been described in full.

coastal saltmarsh on stabilised sand above Mean High Water Springs. Okura estuary is part of the Long Bay Okura Marine Reserve. The Okura River provides habitat for giant kokopu and long-finned eel. The Department of Conservation has selected this area as an Area of Significant Conservation Value (ASCV).

**Significant Ecological Area – SEA M1 64b Marine 1**
Saline vegetation and other intertidal areas grade into coastal pohutukawa forest on sheltered cliffs, then into taraire forest on coastal hill country, and finally into kanuka forest on a headland. Both of the latter are considered to be the best examples of their types in the ecological district. At Karepiro Creek, the marine environment grades into significant coastal saltmarsh on stabilised sand above Mean HighWater Springs. The Department of Conservation has selected this area as an Area of Significant Conservation Value (ASCV).

**SEA M1, 64W1 – Significant bird wading area** – See 64a, 65a, 65b Extensive intertidal feeding habitat for waders along this coastline.
**64a-** Intertidal- Within this area are a considerable variety of intertidal substrates which together form a complex array of habitats which support a variety of animal and plant communities. The communities living on the wave-cut platforms, cliffs, and beaches at Long Bay have been studied over a long period and are in reasonably good condition. This is a known location of pingao, a threatened plant of mobile sand areas. The intertidal areas within the Okura Estuary and outside its entrance range from fine mud to sand and are used as a feeding ground by several hundred wading birds. Many of these birds roost on the sandy area at the entrance to the Estuary at high tide. A variety of other coastal birds feed and roost within this area. Areas of saltmarsh and mangrove line the Estuary and are used by banded rail, a threatened secretive coastal fringe bird. The adjoining terrestrial vegetation which provides shelter for the birds and offers potential nesting sites. This saline vegetation and other intertidal areas grade into coastal pohutukawa forest on sheltered cliffs, then into taraire forest on coastal hill country, and finally into kanuka forest on a headland. Both of the latter are considered to be the best examples of their types in the ecological district. At Karepiro Creek, the marine environment grades into significant coastal saltmarsh on stabilised sand above Mean High Water Springs. Okura Estuary is part of the Long Bay Okura Marine Reserve. The Okura River provides habitat for giant kokopu and long-finned eel. The Department of Conservation has selected this area as an Area of Significant Conservation Value (ASCV).

[266] In addition, we summarise here additional information provided to us about benthic habitat types in the Estuary.

There are mangroves and high-density burrows on the mudflats of the upper estuary,

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> mounds and pits, high density cockle beds and low-density deposit feeders in the area around Okura village and mangroves in Pye's Creek and in the creek opposite. As the estuary opens out opposite the OHL land there are large, high-density cockle beds in the central and southern estuary, high-density pipi and cockle beds near the southern shoreline and large areas of low-density deposit feeders in the wider estuary out towards Dacre Point.[168]. The area is home to a high diversity of shoreline and marine birdlife, many of which are Threatened or At Risk species as described in the Avifauna section of this decision which follows. Three small depositional basins lie at the mouths of three creeks on the Estuary's southern shoreline, constrained by rocky outcrops and the presence of the Okura channel. These contain mainly muddy habitat and support benthic species with tolerance or preferences for muds such as polychaete worms, crabs or cockles.[169]

[267] We will assess the effects of the OHL development on these habitats by reference to the following key findings which we have previously made in our sections on the modelling of the earthworks and sediment discharges and the metal contaminant discharges and dispersion.

- The worst-case scenario in terms of short-term deposition was for a 100 year ARI storm with untreated sediment (and a sediment particle size of 40 micron) where the predicted sediment depth is about 0.7 mm. The threshold for adverse effects on benthic biota is 3mm;
- As inputs to the ecological evaluation, the predicted maximum deposited and suspended sediment concentration levels (SSC) from the untreated earthworks on the OHL land are both well within the threshold levels agreed by the marine ecology experts;
- The predicted maximums are also very conservative as they are based on the sediment discharges from the OHL land being untreated, all of the sediment assumed to be 40 micron particle size for the prediction of the deposition effects and all of the sediment assumed to be 5 microns for the prediction of the SSC;
- The evidence of Dr Townsend and Dr Green was that the metal equilibrium guideline thresholds - in particular the existing ERC guideline levels – will not be exceeded[170] and we found in favour of this evidence;
- Dr Townsend's further evidence was that it would be difficult to detect differences in the benthic community structure in the Estuary.

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168 Townsend EIC Fig 1 page 10.
169 Townsend EIC page 4.
170 Townsend EIC at [6.5].

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*The Parties' Positions*

[268] The Council submitted that cumulative effects had not been taken into account and that there was considerable uncertainty about the potential effects of the OHL development on the ecology of the Estuary, necessitating a precautionary approach which would preclude development of the Site.[171] It noted in particular the rarity within the Auckland Region of the natural environment characteristics of the Estuary and the recognition that had been given to this in the 1996 and 2003 Court decisions.[172]

[269] Forest & Bird was critical of the extent to which the OHL expert witnesses had relied on guideline thresholds to assess the effects on marine ecology. Noting that the Estuary was already known to be sediment-stressed, it contended that increased suspended sediment may affect suspension feeders, reduce overall diversity of habitat types and change benthic diversity that is relied on by wading birds. It went on to say that modelling was only one tool for decision-making and that the ecological effects of sediments may be long term and cumulative with the potential for a tipping point to be reached which modelling did not address. Further, potential risks of sedimentation needed to be considered in the context of the ecologically valuable Estuary with its Marine Reserve status and a precautionary approach should be taken if the protective imperatives required by RPS Policy B2.2.2(2) were to be met.

[270] The Society raised concerns about the potential for adverse effects to arise below the guideline thresholds. It cited RPS issue E7.1, "The combination of urban growth and past land, coastal and freshwater management practices have placed increasing pressure on land and water resources including habitats and biodiversity", and RPS objective B7.2(1), that "Areas of significant biodiversity value in terrestrial, freshwater and coastal marine areas are protected from the adverse effects of subdivision, use and development" and that to "protect" meant "to keep safe from harm, injury or damage".

[271] OHL said that the Council's opposition to its proposal was largely based on the precautionary approach "that even with the current best practice erosion and sediment (control), the risk of sediment entering the Okura Estuary is unacceptable". It quoted from Mr Cook's evidence that in relation to Policy 3 of the NZCPS and Policy

171 Council Closing Submission at [11.34].
172 Council Closing Submission at [7.15] ff.

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5 in B8.3.2 of the RPS, before a precautionary approach is required, effects on the coastal environment are to be uncertain, unknown or little understood and potentially significantly adverse if they were to arise. OHL contended that neither apply to its proposal.[173]

[272] OHL also contended that very little uncertainty exists due to the extensive modelling undertaken.[174] While it acknowledged that some species could have ecological responses to copper in combination with other metals at concentrations below the Council's Environmental Response Criteria, OHL said that Dr Thrush did not identify which species would be impacted in the manner he described in his evidence.[175]

*The Issues*

[273] We have identified the following issues for our evaluation on the effects of the proposed development on marine ecology:

- *Issue 1: Whether the findings from the sediment and heavy metal discharge modelling on their own are comprehensive enough for assessing the effects on benthic ecology of the Estuary or are there other factors which also need to be considered?*
- *Issue 2: Is there the risk of a 'tipping point" being reached in the Estuary and if so should a precautionary approach be adopted?*

*The Expert Witnesses*

[274] Expert evidence on marine ecology was provided by:

- Dr S de Luca (for OHL);
- Dr A Lohrer (for OHL);
- Dr S Thrush (for the Council);
- Dr M Townsend (for OHL);
- Mr S West (for Forest and Bird and the Society).

*Expert Witness conferences*

[275] Expert witness conferences were held by the above marine ecologists in June and September 2017.

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173 OHL Legal Submission at [5.37].
174 OHL Legal Submission at [5.44].
175 OHL Legal Submission at [5.45 (c)].

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[276] At their June 2017 conference, the expert witnesses recorded the following agreements/disagreements:

- All agreed (apart from Dr Thrush) that the OHL modelling provided the best information available on future sediment deposition rates, future suspended sediment concentration exceedances (duration above thresholds) and future heavy metal accumulation rates. Dr Thrush's view was that the modelling only considered one-off events and did not consider history (we presume such as short-term recurring events);
- The ecological evidence based on the scenarios modelled was a reasonable interpretation but it was confined to those scenarios;
- The Estuary was showing some signs of sediment stress at present with Dr de Luca noting that this stress was mostly in the upper Estuary only.
- In addition to sediment and heavy metal contaminants, risks from the OHL development to the marine environment included elevated foot traffic, and increased plastic waste;
- There would be a possible decrease in nutrient loadings from livestock if farming of the OHL land was to cease;
- With respect to potential adverse effects on marine ecological values, including any threatened or sensitive species and ecosystems:
    - Drs Townsend, de Luca and Lohrer considered that the adverse effects were likely to be negligible; that an appropriate assessment of cumulative effects has been undertaken by OHL; that while the analyses undertaken by OHL to date may not have fully accounted for all possible risks (for example, cumulative impacts), there was never a way to account for all risks.
    - Mr West considered the definition of 'likely' (to be negligible) to be undefined and that catastrophic events could occur;
    - Dr Thrush considered that the full range of values and functions in the Marine Reserve had not been considered because of the focus on individual model scenarios and the lack of consideration of cumulative effects and multiple stressor interactions. He added that any major, unexpected entry of sediments into the Estuary even in advance of the delivery of metal contaminants, could elevate the toxicity of the metals on arrival;

- Dr Lohrer and Dr Townsend noted that their ecological evidence was based on the *combined* effect of sediment from the OHL development *and* the rest of the catchment (their emphasis).

[277] At their September 2017 conference, the expert witnesses recorded the following additional key agreements/disagreements:

- Dr Thrush and Mr West considered that while the modelling was adequate there had been an incomplete assessment of low-probability high-consequence risks. Drs Lohrer, de Luca and Townsend considered that the assessment of the ecological effects was sufficient and covered the relevant information;
- Dr Thrush raised concerns about tipping points which were only detectable once they had occurred. He said that sedimentation and turbidity can contribute to the risk of crossing a tipping point but the "location" of those points is unpredictable;
- Drs Townsend, de Luca and Lohrer agreed that tipping points were unpredictable and that it was unknown whether the Estuary was at a tipping point now, whether it would reach a tipping point if the OHL development proceeded or whether a tipping point would be reached under a CLZ development. Dr Lohrer added, and Dr Thrush agreed, that tipping points could be crossed, even if sediment loadings are reduced, due to other stressors that are unrelated to the OHL proposal;
- Dr de Luca noted other current and ongoing activities in the Okura catchment and wider Karepiro Bay are contributing significantly more sediment than the OHL development would;
- Dr Thrush and Mr West said that a precautionary approach should be adopted whereas Drs Townsend, de Luca and Lohrer considered that as the modelling has taken a cautious and conservative approach, a precautionary approach was not warranted;
- Dr Thrush considered that Dr Lohrer's evidence addressed additive rather than cumulative effects (i.e., not taking past loadings into account).

  Dr Lohrer responded that his assessment was based on the likelihood of sediment effects occurring on top of what has occurred in the past. He said that organisms were present in certain parts of the Estuary because of past and present environmental conditions which included cumulative effects;

- All agreed that 3 mm was the appropriate sediment deposition threshold although Mr West said that adverse effects can occur below thresholds, particularly in the case of multiple events in succession;
- All agreed with the thresholds adopted in the modelling for SSC;
- Dr Thrush said that ecological effects could be detected below the threshold levels and he was not satisfied the Auckland Council ERC guidelines were appropriate as they were not sensitive enough. He preferred the benthic health model although he acknowledged it was not appropriate for use as a guideline;
- Dr Thrush was also concerned that heavy metals concentrations would cross a threshold if they continued to accumulate. Dr Townsend responded that Dr Green had shown that metal concentrations would equilibrate below ERC threshold levels;
- All agreed there were no ecological issues to consider in the wider Karepiro Bay area that were relevant to the OHL development.

*Discussion and Findings on Issues*

*Issue 1: Whether the findings from the sediment and heavy metal discharge modelling on their own are comprehensive enough for assessing the effects on benthic ecology of the Estuary or if not what other factors need to be considered?*

[278] Dr Thrush expressed reservations about the modelling results. While the model had adopted sediment thresholds agreed by the expert witnesses in their joint statement, Dr Thrush said that the thresholds were only appropriate within the constraints of the modelling scenarios run. He maintained that adverse effects occur below those thresholds and that organisms are potentially responding to a range of stressors. For example, a contaminant may be toxic to organisms at a lower than threshold level if other stressors are present.[176]

[279] He added that rare and extreme events can occur, for example multiple events in an estuary may occur at shorter frequencies than those to which an organism is capable of responding, leading to a cumulative adverse effect over time. There may be events or issues of ecological concern that occur over a period of months or longer. He said that such situations do not fit well within the scenarios used in the model

[176] NOE at page 264.

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which were run for approximately 10 day periods.[177]

[280] Responding to questions about the depth of sediment that caused adverse effects in a South Auckland study, Mr West considered that while 3 mm was sufficient for some biota, frequent events of 1 mm were sufficient to cause some adverse effect.[178] Later in questioning he noted that the NIWA model used a single event and if that 1 mm events occurred more frequently (and there was no information on how frequently those events might occur) then it would be difficult to make an assessment as to the potential ecological effects.

[281] Dr Lohrer responded to Dr Thrush's concerns that cumulative effects presented a risk that had not been addressed by the risk assessment and interpretation by the OHL expert witnesses. He acknowledged that not all cumulative and multiple stressor effects could be considered as part of the modelling. However, he pointed out that the likely sediment load from OHL's land was added to that from other parts of the catchment to assess whether the combined volume could cause exceedance of ecologically important thresholds. He also noted that the vast majority of sediment entering the Estuary was from sources other than the OHL land.[179]

[282] Dr Lohrer confirmed that the sediment modelling looked at single events, rather than the combined effects of events over a projected nine-year [earthworks] period. Referring to a paragraph in his evidence in which he had stated that "A small single magnitude event may have practically undetectable impacts, however the cumulative effects of repeated chronic exposures can over time lead to observations of ecological harm" he confirmed that this could be the case. He said that he had investigated this experimentally with six deposition events of 3 mm of sediment over a six-month period where there was a change in community composition at one of two sites. However, he said he believed this change was relatively minor.[180] He deposed that animals of the type which he experimented with can recover from sediment deposition at the given rate within a couple of weeks.[181]

[283] Dr Lohrer was questioned about his evidence which largely discounted the probability of two consecutive large storms occurring within a 10-day period. He

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177 NOE at page 270.
178 NOE at page 349 then 354.
179 Lohrer EIC at [9.1], [9.2].
180 NOE at page 805.
181 NOE at page 806.

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responded that by adopting a 3 mm sediment deposition threshold, the modelling accounted for the possibility of multiple rain events occurring in quick succession.[182]

[284] We repeat here our finding in the sediment modelling section of this decision that the combined sediment loadings from a series of multiple rain events were well within the loading for a single 100 year ARI event.

[285] Dr Lohrer described measurements he had undertaken of the behavioural responses of organisms following two rainfall events within two weeks (57.5 mm total rainfall).[183] He said that he had observed some small changes in macrofaunal behaviour in terms of re-burial rates, the ability of animals to right themselves and subtle shifts of macrobenthic community composition. However, two weeks after the second rainfall event the macrofaunal community structure was indistinguishable from that prior to the events. He indicated that small adverse events such as these can occur but that these are transitory effects and no more than minor, as impacted communities can recover quickly.

[286] Asked about the risk of a large slug of sediment entering the Estuary (for example if a structure failed) Dr Lohrer agreed that the risk could not be discounted but should be weighed against its likelihood, and that the coastal dispersion scenarios modelled had tested some very large storm events, including no treatment of sediment laden runoff from earthworks.[184]

[287] Dr Lohrer was asked a series of questions about the Auckland East Coast Monitoring Programme results (Exhibit 23). The findings of this programme had shown that there had been a statistically significant decline in the number of New Zealand cockles in the Estuary in the three years from April 2014 and that this trend was consistent with increased sedimentation having been detected at all of the Estuary monitoring sites.

[288] Dr Lohrer responded that trends can be part of long term cycles with periods of high and low recruitment depending on hydrodynamics and where larvae are being directed to. While accepting the report's findings he would not "over-interpret to say that it was evidence of a declining trend" of cockle populations. He explained that the

182 NOE at page 806.
183 NOE at page 815.
184 NOE at page 811.

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tabulated sedimentation data did not allow him to attribute the decline in cockle abundance to sediment deposition because the data did not show a cause-and-effect relationship.

*Findings on Issue 1*

[289] The potential for adverse effects on benthic fauna that could result from circumstances other than those modelled was raised by Dr Thrush and Mr West, both casting doubt on the comprehensiveness of the modelling in so far as this complex ecological system is concerned.

[290] We think that their concerns can be encapsulated in Auckland Council Working Report 2013 (by Dr Thrush and others) where, commenting on the contaminant guidelines, it states that:

> While the guidelines outlined above are useful for assessing the effects of individual contaminants they do not take into account the cumulative effect of multiple contaminants or other stressors at the same time (Thrush *et al.* 2008), so it is still entirely possible for ecological health to be affected under ERC green conditions (Hewitt et al, 2009).

[291] Notwithstanding, apart from pointing to the potential for there to be adverse effects from "cumulative effects or other stressors", we have been left in something of a vacuum on this issue in that neither Dr Thrush nor Mr West provided us with any substantive evidence about what these might be and the degree of their potential influences.

[292] The predicted maximums from the sediment modelling have been based on sediment discharges from the OHL land being untreated; that all of this untreated sediment has been assumed to be 40 micron particle size for the prediction of deposition effects and 5 microns for the prediction of the suspended sediment concentrations (SSC); that the predicted deposition and SSC levels of both are well within the agreed thresholds.

[293] While there has been considerable conservatism built into the modelling of the effects of the sediment and heavy metal discharges on the benthic biota and the levels modelled are well within agreed thresholds, there remains a degree of uncertainty about how cumulative effects and other (undefined) stressors might impact on these modelled results.

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*Issue 2: Is there the risk of a 'tipping point" being reached in the Estuary and if so should a precautionary approach be adopted?*

[294] We repeat here what the expert witnesses had to say about tipping points at their September 2017 expert witness conference:

> Dr Thrush raised concerns about tipping points which were only detectable once they had occurred. He said that sedimentation and turbidity can contribute to the risk of crossing a tipping point but the "location" of those points was unpredictable.
>
> Drs Townsend, de Luca and Lohrer agreed that tipping points were unpredictable and that it was unknown whether the Estuary was at a tipping point now, whether it would reach a tipping point if the OHL development proceeded or whether a tipping point could also be reached if there was a CLZ development. Dr Lohrer added, and Dr Thrush agreed, that tipping points could be crossed, even if sediment loadings are reduced, due to other stressors that are unrelated to the OHL proposal.

[295] Having done so we summarise here the evidence from a number of sources (some of the evidence being conflicting) describing the ecological health of the Estuary.

[296] The Council's estuarine monitoring programme monitors 10 intertidal sites from which six replicate macrofaunal cores have been collected approximately twice yearly since 2000. The purposes of the programme and comparison of results are to detect changes in macrofaunal communities driven by increases in both turbidity and the proportion of fine muddy sediments in the seabed. Sediment input is considered one of the top long-term threats to the ecology of the Estuary.[185] Health metrics for the Estuary analysed from 2009 to 2016 range from 'moderate' (upstream) to 'extremely good' (out towards the mouth of the Estuary). Recent trends have shown increasing amounts of very fine sand and mud at seven of the monitoring sites with trends in species populations/community metrics consistent with increased sedimentation; one temporal trend being consistent with increased sedimentation detected at all ten sites.

[297] Figure 7.4.2 of the Unitary Plan identifies the Estuary as being "Degraded 1" or "Degraded 2" (in accordance with the "Identification of Degraded Marine Receiving Environments – Working Report 009" (September 2013)). "Degraded 1" is defined as

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185 EIC Lohrer at [5.1] ff.

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being those areas where monitoring data shows a high level of degradation or areas that can be identified with high certainty. "Degraded 2" is defined as being those areas where monitoring shows a moderate level of degradation or that can be identified with reasonable certainty.

[298] The report noted that *Degradation* was assessed based on three ecosystem measures, marine water quality, sediment contamination and benthic health. Where an area was identified as degraded for any one of these measures, it was designated as degraded.

[299] Dr de Luca elaborated on this report. She said that intertidal sites had been monitored on a regional basis according to categories of relative ecosystem health based on community composition and predicted responses to stormwater contamination or muddiness. The monitoring was based on a five-point scale of 1-5 where 1 was "healthy" and 5 was "unhealthy". Resilience of an ecosystem became compromised around benthic health group 4 and very little resilience was left in benthic health group 5. Benthic health group 3 (the middle of the range) was important with respect to protection and potential remedial action.

[300] Scores of 3 and 4 were recorded for sites in the inner Estuary and 3 at a site near the southern shoreline by the OHL land. Scores of 1 and 2 had been recorded at other locations in the Estuary. Dr de Luca said that these low scores had contributed to the Degraded 1 and Degraded 2 zones shown on Figure 7.4.2[186]

[301] She said that with the degree of degradation in the smaller east coast estuaries (including Okura) reflecting historical as well as current land disturbance coupled with the size and shape of the estuaries, all of which was likely to be ongoing, the future resilience of at least some parts (our emphasis) of the Estuary may not be assured.[187] She added that the sediment monitoring sites near the mouth of the Okura River had been graded as good in the past whereas in 2015 they were graded as extremely good. Conversely, upstream sites had been graded as moderate and poor in the past but were graded moderate in 2015.[188]

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186 Marine Degraded Areas in Auckland. See Attachment 1 to the Council's Closing Legal Submissions.

187 We presume at least in Degraded 1 and Degraded 2 Zones.

188 de Luca EIC at [3.9].

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[302] Having provided this background, Dr de Luca added that in her opinion, the sediment and metal contamination modelling undertaken by OHL was appropriate and "provided a high level of certainty as to what could reasonably be anticipated (from the discharges from the OHL site)". She noted that the mudflats in the Estuary were inhabited by ubiquitous species which were tolerant of sediment discharges and that the Karepiro Bay benthic environment was very healthy with high biodiversity and resilience while receiving sediment and contaminants from the surrounding catchments.[189] She did not consider that the minor amount of sediment and metal contaminants modelled at the stream mouths at concentrations below effects thresholds could lead to a catastrophic tipping point.

[303] In support of this opinion, she added that the following matters were known: from the modelling, earthworks would deposit "a little bit" of sediment at the stream mouths and that would be largely removed from the system; that total suspended sediment (TSS) was quickly reduced; that the invertebrate populations throughout the Estuary were diverse; and that the Council's monitoring referred to all sites within the Estuary as having functional redundancy and being resilient. She agreed that tipping points could only be detected in hindsight, and that it was not possible to rule out the possibility of a tipping point being reached. She reiterated that the system had resilience and that in her opinion, the effects of the OHL project would be negligible.[190] She made it clear that her assessment of effects relied on the effectiveness of measures being imposed to control sediments over the nine-year earthworks period.

[304] Dr Lohrer told us that from field surveys which he had undertaken following repetitive rainfall events (and sediment discharges), there could be transitory effects which were no more than minor and that impacted communities recovered quickly.

[305] There was no detailed evidence from the other expert witnesses on this matter.

*Finding on Issue 2*

[306] We note the significance of the Estuary with its overall importance being formally recognised by a number of statutory instruments including its Marine Reserve status and the SEA provisions of the Unitary Plan.

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189 de Luca at EIC [6.9].
190 NOE at page 922.

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[307] While we have identified what appear to be inconsistencies in the evidence about the resilience (or not) of the Estuary's ecosystem, we place greater weight on the Unitary Plan identification (Fig 7.4.2) as it is a statutory document based at least, in part, on monitoring data gathered for the express purpose of estuary management.

[308] In the *Identification of Degraded Marine Receiving Environments* report, metals were excluded for Okura on the basis that their levels were very low or non-detectable.[191] Dr Townsend also concluded that it would be difficult to detect differences in the benthic community structure from the baseline condition for metal contamination from the OHL land ... and that ... while there might be slight increases or decreases in one or two species, these would be very difficult to measure and in any case the changes would not affect the functioning of the ecosystem.[192]

[309] Based on this evidence, our finding is that there is a very low risk of natural and anthropogenic heavy metal contaminants contributing in any significant way to adverse cumulative effects.

[310] With regard to the sediment modelling, we have found that, while there was considerable conservatism built into the modelling and the effects of the modelled sediment discharges on the benthic biota were well within agreed thresholds, there remained a degree of uncertainty about how cumulative effects and other (undefined) stressors might impact on the modelled results.

[311] Whether this uncertainty has the potential for the effects of discharges from the proposed development to cause the benthic health of the Estuary to reach a tipping point and consequently whether a precautionary approach should apply is arguable. What may well tip the balance for us is the significance of the Estuary with its importance being formally recognised by a number of instruments including its Marine Reserve status and the SEA provisions of the Unitary Plan.

[312] A further input for our consideration as to whether a tipping point is approaching and whether the precautionary approach should apply are the effects of the proposed development on marine avifauna. Having completed the evaluation of

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[191] Identification of Degraded Marine Environments Report at [2.3].
[192] NOE at page 871.

those effects (in the next section of this decision), we then assess the effects of the proposed development on both benthic biota and avifauna under Policy B8.3.2 (5) of the Unitary Plan which requires...

> Adoption of a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown or little understood, but could be significantly adverse.

[313] As we report below, the uncertainty which attaches to the probability of adverse effects in the areas discussed is also relevant to the s 32 assessment we must make of the merits of the different outcomes sought by the parties.

**Avifauna**

*Background*

[314] In this section of our decision we discuss the potential effects of the OHL development on avifauna[193] and their habitats in the Estuary and Karepiro Bay.

*Parties' Positions*

[315] The Council identified the key avifauna issue as being whether (and if so to what extent) OHL's proposed development would have adverse effects on the Threatened and At-Risk indigenous seabirds, shorebirds, salt marsh and wetland birds that reside in or use the Okura River and wider Karepiro Bay area adjacent to the OHL and FUZ land. [194] It said that urbanisation as proposed by OHL posed a much higher threat to the Threatened and At-Risk bird life in the Estuary and wider Karepiro Bay environment than a CLZ development.

[316] Forest and Bird highlighted the protections provided for in a number of statutory documents for scheduled indigenous biodiversity in the coastal environment including terrestrial, marine and aquatic biodiversity[195]. It noted that such stringency was necessary under the NZCPS and Unitary Plan as human activities and disturbance by dogs and cats had already caused considerable adverse effects on biodiversity in the Auckland region. It went on to point out the relative remoteness of the site and highlighted the adverse effects which would result from the large number

193 In this we include coastal and shore birds which are variously referred to by the Expert Witnesses.
194 Council Opening Submission [12.1-2].
195 Forest and Bird Submission at [47].

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of additional residents and visitors from an OHL development (a possible permanent population of 2,400-3,800 people). It added that the outcomes of the Precinct Provisions and any consents required were too uncertain for the Court to be confident that enforceable conditions on these matters could be implemented.[196]

[317] The Society identified a range of effects on avifauna that it said would arise from the development of the OHL land including noise, light, traffic and construction related activity. It added that there would be a "very real, even profound cumulative effect" of the occupation, day and night, by 2,000 or 3,000 people, with pets, vehicles, music and all the other accoutrements of human residential activity separated by little more than a rugby field from the margin of the Estuary.

[318] OHL's response to these concerns centred on the implementation of a robust and effective pest and cat management plan as the primary mechanism for protecting avifauna as well as for dog owners to take personal responsibility for controlling their dogs.[197]

*The Issues*

[319] We have identified the following issues for consideration in our evaluation of the effects of the OHL development on avifauna:

- *Issue 1: The current use and importance of the Estuary for avifauna.*
- *Issue 2: Having earlier considered the effects of sedimentation and heavy metal discharges from the OHL development on the benthic biota of the Estuary, what is the potential for biota (if contaminated) to adversely affect the Estuary's avifauna.*
- *Issue 3: What are the potential effects on avifauna of increased populations of humans, cats and dogs from urbanised OHL land?*

*The Expert Witnesses*

[320] Expert evidence on this topic was provided by:

- Dr J Craig (for OHL);
- Mr G Don (for Forest and Bird and the Society);
- Dr T Lovegrove (for the Council);

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196 Forest and Bird Submission at [16].
197 OHL Submission at [11].

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- Mr S West (for Forest and Bird and the Society).[198]

*Expert Witness Conferencing*

[321] In their joint statement dated 9 June 2017, the expert witnesses agreed that the bird populations of greatest interest in the Estuary were New Zealand dotterel, variable oystercatcher, shore plover, godwit, fluttering shearwater, banded rail and little penguin. We note that little penguin was not discussed in the evidence of any of the expert witnesses.

[322] In their second joint statement dated 28 August 2017 the expert witnesses agreed that:

- The bird counts provided by Michaux, Boffa Miskell, Mr Don, Dr Lovegrove and local care groups were sufficient to enable the assessment of the effects of the proposed OHL development;
- The threat status of the birds listed in these counts was consistent with the Department of Conservation Threat Status publication;[199]
- There was a relationship of the OHL land to important bird habitats in the Estuary and the intertidal bird habitats and species of the Estuary;
- Direct effects on the shore birds of the southern shore adjacent to the OHL land may include disturbance by people, impacts of domestic pets, impacts of predators and loss of an existing inland high tide roost (noting that the latter was also expected to disappear under development of a countryside living lot);
- Effects on birds may also arise from lighting, sediment, contaminants and additional human disturbance such as kite-surfing;
- Kite surfing is not regulated and may occur independently of the subdivision and may have negative effects on shorebirds.

[323] The expert witnesses also agreed mitigation methods that could be adopted for many of the above matters included:

- Disturbance by people on the southern shore adjacent to the OHL land could be mitigated by provision of alternative walking access away from the foreshore with planting to screen off bird habitat and signage and education about avoiding bird habitat areas;

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198 Mr West though not an avifauna expert gave evidence which was relevant to this topic.
199 Robertson *et al.* 2017.

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- Effects of domestic pets on the southern shore could be reduced by a total ban on cats ... they recommended that there be a policy on this while acknowledging that the practicalities of implementing such a policy may limit its adoption;
- A recommendation that dogs be allowed only on fully fenced properties; that they be allowed in reserve areas only when leashed; and that they be prohibited from land below mean high water level;
- Street and walkway lighting could be baffled and directed downward.

*The avifauna species present and their threat status*

[324] In Appendix 1 to his evidence, Dr Lovegrove provided a table of bird species found in the Estuary with their threat status. This relied on bird counts from 2012 and 2014 made by Michaux (2016) for sea, shore, saltmarsh and wetland birds. Mr Don added several other species to this list to give a total of 25 recorded coastal species, 18 of which (72%) were either Threatened or At Risk on a national basis.[200] Five of the species were endemic, of which two were At Risk species.

[325] The 18 species with the highest threat status are listed below with their threat rankings, starting from the highest possible threat status:

| | |
|---|---|
| • Threatened, Nationally Critical: | Grey duck<br>Shore plover |
| • Threatened, Nationally Endangered: | Reef heron |
| • Threatened, Nationally Vulnerable: | Banded dotterel<br>Caspian tern<br>Lesser knot |
| • At-Risk, Declining | Banded rail<br>Spotless crake<br>Pied oystercatcher<br>Bar-tailed godwit<br>Red-billed gull<br>White-fronted tern |
| • At-Risk, Recovering | New Zealand dotterel<br>Pied shag<br>Brown teal<br>Variable oystercatcher |
| • At-Risk, Relict | Fluttering shearwater |
| • At-Risk, Naturally Uncommon | Royal spoonbill |

[326] As noted earlier, the species of greatest interest in the Estuary are the New

200 Don EIC at [4.1.7].

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Zealand dotterel, variable oystercatcher, shore plover, godwit, fluttering shearwater, banded rail and little penguin.

[327] The summary below describing the conservation values of several of these species was drawn from Dr Lovegrove's evidence.[201] He noted that active conservation management such as predator control and the protection of nesting sites from people and their pets has been responsible for the recovery of some of these species.

- New Zealand dotterels are of particular interest because up to 19 birds were recorded roosting in the Okura estuary (as reported in Michaux 2016). A population of >1% of the global population is considered internationally significant. NZ dotterels are recovering in the eastern North Island, a result of active conservation management;
- Variable oystercatchers have 10-12 active breeding territories in the Karepiro Bay to northern Long Bay area, with a winter flock of 22 birds in July 2014. The total New Zealand population is ca. 6,000 birds. The species is vulnerable to disturbance by beach-goers and their nests are vulnerable to dogs, evidenced by a failure of breeding in Long Bay Regional Park during a period when dogs were allowed off-leash in the northern part of the Park;
- Shore plovers are one of New Zealand's rarest birds (population 150), having been wiped out from the mainland in the late 19th century. The species has been re-introduced to pest-free Motutapu Island and a single bird sighted at Okura is believed to have dispersed from there. Karepiro Bay is one of the closest large intertidal areas to Motutapu Island;
- Bar-tailed godwits are international migratory birds whose numbers peak in Karepiro Bay between October and March. This is part of an important network of intertidal feeding habitats on Auckland's east coast;
- Fluttering shearwaters feed in the shallow waters of outer Karepiro Bay in autumn and winter, as part of their network of favoured feeding habitats along the North Island's north-east coast. The nearest significant breeding sites for the species are the Hen and Chicken and Mokohinau Islands in the outer Hauraki Gulf;

[201] Lovegrove EIC at [7].

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- Banded rails were observed in the saltmarsh of the Estuary in 2015, and this habitat is considered likely to support a locally significant population of this cryptic and easily-overlooked species;
- Little penguin (no description provided).

*Existing use of the Estuary and wider Karepiro Bay*

[328] The existing Okura settlement comprises approximately 130 residential sites zoned Residential Single House. Most are developed and Mr Mead advised it was not intended that the zone be extended.[202] A modest boat launching facility exists on the foreshore accessible across the seabed at low tides. There is limited vehicle and trailer parking at the road end where the ramp is accessed. We heard evidence about recreational boating from the ramp, kayaking and the like.

[329] More than 70,000 people per year are reported to walk the Okura Bush Walkway on the northern side of the Estuary (part of Te Araroa).[203] No breakdown was provided of seasonal or weekend use versus weekday use although on average the annual total works out at 192 people per day. It seems reasonable to assume that summertime visitor numbers would be higher than in winter.

[330] Dogs are not allowed on the Okura Bush Walkway.

[331] Our understanding from Mr Townend[204] is that Te Araroa walkers cross the Estuary on the tidal flats at low tide to join the Long Bay Regional Park track just east of Piripiri Point, thereby avoiding the longer walk around the upper Estuary. An alternative crossing from the Okura spit across the Estuary to the boat ramp area requires walkers to wade across and then use the road network to access Long Bay Regional Park. As Pye's Creek to the immediate east of the Okura settlement does not have a crossing point, walkers cannot head north-east along the shoreline to the Long Bay Regional Park track.

*Future use of the Okura Estuary and Karepiro Bay area*

[332] Unitary Plan provisions enable the development of houses on the 29 CLZ lots previously described. It might reasonably be assumed that at least some persons

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202 Mead EIC at [61].
203 Townend EIC at [5.2].
204 Townend EIC at [8.1] - [8.6].

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associated with these lots (if developed) would recreate on the southern edge of the Estuary and the wider Karepiro Bay. The Weiti development that fronts onto Karepiro Bay will, we understand, provide approximately 550 residences.

*Discussion and Findings*

*Issue 1: The current use and importance of the Estuary for birds*

[333] While there was agreement between the expert witnesses on the species present and their current threat status, there were differing views as to the relative importance of parts of the estuarine habitat for the species, the degree to which current use has allowed these species and populations to flourish, and the value of the Estuary in context with the local coast-line.

[334] Dr Lovegrove[205] provided context to the Estuary as a strategic site for sea birds on the north Auckland coast. Asked about other estuaries nearby that the birds might use, he described the Orewa Estuary as being hemmed in by suburbia and with lower values, and the Omaha Estuary and spit, on which New Zealand dotterels and variable oystercatchers can nest, as having a similar area and similar range of species to Okura.

[335] Dr Lovegrove described Okura as part of a network of sites along the coast used by species such as bar-tailed godwits, fluttering shearwaters and three species of shag, and noted its potential as a part of the future habitat of shore plover which has been re-established on predator-free Motutapu Island. A single shore plover has been observed visiting the Estuary area, with potential for such use to increase in future.

[336] The twenty-five bird species[206] recorded in the intertidal and near-shore habitat across the wider Long Bay-Okura-Karepiro-Weiti area constitute a highly diverse community, in Mr Don's terms indicating "a mosaic of habitats for marine birds that is of significant value".

[337] The diversity of habitats for coastal birds was further described by Mr West[207] as "a considerable variety of intertidal and coastal habitats including sandy beaches,

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205 NOE at page 94.
206 The total number of species reported in that area by the Expert Witnesses.
207 West EIC at [5.2] - [5.3].

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rocky reefs, estuarine mudflats and mangroves ... it was the only Marine Reserve that protected the coastal habitats in this part of the east coast of Auckland and ... it protected extensive soft sediment habitats in the inner Hauraki Gulf that are different from the other Marine Reserves in the region..." Mr West considered that the "significance of the Long Bay-Okura Marine Reserve lies in the variety of habitats protected as well as its close proximity to urban Auckland."

[338] Based on information in Michaux and data provided by Boffa Miskell,[208] Dr Craig looked more specifically at the locations of various species observed in the Estuary and shoreline as opposed to the broader Karepiro Bay. He pointed out that a small number of birds and a predominance of non-threatened species was recorded on the mudflats and shoreline adjacent to the OHL land. Conversely, he said that the greatest number of Threatened and At-Risk species were seen adjacent to the boat ramp at nearby Okura village, that no threatened species were recorded adjacent to the OHL land except for a single Caspian tern, and that the bird counts at Karepiro Bay and Wade River included more Threatened and At-Risk species than in the Estuary.

[339] The conclusion Dr Craig drew was that Michaux's bird counts (relied on by all three expert witnesses) were from a much larger area and range of habitats and did not represent the range or abundance of species in the vicinity of the OHL land. He was less convinced than Dr Lovegrove and Mr Don that the New Zealand dotterel roost below the OHL land (where some 22 birds had been observed) was an important site.[209] While six threatened species have been recorded in the vicinity of the OHL land, his view was that birds that are seen once over a period of four years or once in 80 counts "could hardly be said to be relying on it".[210]

[340] While not providing evidence on the effects of the OHL proposal on avifauna, Dr Flynn provided further information about the Estuary as an important wildlife corridor within the "North-West Wildlink", an initiative aimed at providing a wildlife corridor through from the Hauraki Gulf Islands and Whangaparaoa to the Waitakere Ranges.[211]

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208 Craig EIC at [3.12]-[3.15].
209 NOE at page 779.
210 NOE at page 792.
211 Flynn EIC at page 5.

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*Finding on Issue 1:*

[341] The Estuary provides an intact sequence of natural habitats from terrestrial forest to marine ecosystems which is regionally and nationally rare. The Estuary and wider bay provide a variety of bird habitat types, including along the south shore of the Estuary adjacent to the OHL land, supporting a diversity of bird species including 18 recorded Threatened and At-Risk species, six of which are Nationally Critical, Nationally Endangered or Nationally Vulnerable. The importance of the Estuary is reflected in its Marine Reserve and SEA status, partly because it provides extensive wading bird habitat as well as adjoining nesting, roosting and shelter opportunities. The diversity of bird species and habitats was accepted by all the expert witnesses.

[342] We agree with the Council that this area has special environmental values such that it will become progressively more important to protect as Auckland expands.

[343] We find that these values include highly diverse avifauna and that the area is of great importance for avifauna in the Auckland and wider coastal environment.

*Issue 2: Having earlier considered the effects of sedimentation and heavy metal discharges from the OHL development on the benthic biota of the Estuary what is the potential for biota (if contaminated) to adversely affect the Estuary's avifauna.*

[344] Dr Lovegrove pointed out that coastal and wetland bird species rely on a healthy food chain in the estuarine environment and that increased turbidity in the water column, and sedimentation could affect the health of the benthic fauna relied on as a food source.[212]

[345] Dr Lovegrove[213] and Mr Don both said that there was the potential for further sedimentation to result in expansion of mangroves in the Estuary, which could limit feeding habitat for shorebirds, whilst conversely acknowledging that this could improve habitat for banded rail. Mr Don[214] provided figures to show that mangrove coverage has increased in the Estuary near the Okura spit over the period 2004 to 2017. Dr Craig cited literature that indicated mangrove expansion was linked to sediment inputs from 30-40 years ago, rather than from more recent land use

212 Lovegrove EIC at 7.18.
213 Lovegrove EIC at 7.18.
214 Lovegrove EIC at [5.2.5].

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activities.[215]

[346] In relation to the effects of sedimentation on the habitat of coastal birds, Mr Don[216] explained the risk to coastal birds of a change in substrate composition, noting that species have different preferences for the substrates in which they feed, with (for example) bar-tailed godwits preferring an intermediate to muddy substrate and oystercatchers a sandy environment.

[347] Mr Don[217] said also that heavy metal contamination posed a risk to birds both in relation to potential effects of chronic exposure on the abundance and diversity of prey species and on the potential effects on the physiology of shore birds ingesting those species. He noted that sediment quality guidelines used in the Auckland region are not predictive of bioaccumulation effects that may affect higher trophic levels (for coastal birds in this instance), and that even at concentrations considered "low" there was a 10% chance of toxicity. He further noted that although threshold effects levels "represent concentrations below which adverse biological events are expected to occur rarely" this is not a zero-effect threshold, with up to 25% of adverse effects occurring below the threshold level.

[348] Questioned by the Court about the potential for sediment deposition from development of the OHL land to affect benthic fauna with consequent effects on birdlife, Dr Craig responded by commenting that there are significant inputs of sediment to the Kaipara Harbour which he described as "constantly yellow and brown" yet "it is one of the four best sites for wading birds in New Zealand, it has hundreds of thousands of birds". He also commented on continued use of the Tamaki Estuary and Panmure Lagoon by many wading birds, apparently able to find food there despite high sediment loads and pollution.[218] He did not provide evidence of historical and contemporary abundance at these locations.

*Finding on Issue 2*

[349] We have accepted the evidence of Dr Townsend and Dr Green that metal equilibrium concentrations in the deposition basins adjacent to the OHL site will be well below the environmental response criteria. We think it is unlikely that there will

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215 Lovegrove EIC at [5.5].
216 Don EIC at [5.2.4].
217 Don EIC at [5.2.7].
218 NOE page 798.

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be adverse effects on avifauna at the levels of contaminants that have been identified but note Mr Don's comments in that regard, that bioaccumulation can occur at higher trophic levels.

*Issue 3: What are the potential effects on avifauna of increased populations of humans, cats and dogs from urbanised OHL land?*

[350] Dr Lovegrove described the existing relatively low level of access to the coastal edge of the Estuary which limits disturbance to the birds.[219] He went on to say that:

> This remoteness allows variable oystercatchers and New Zealand dotterels to breed and roost relatively undisturbed at nearby Karepiro Bay, on the spit on the northern side of the Okura River, just opposite the OHL land, and on the shore platform and beach below the OHL land east of Pyes Creek. It also allows a wide range of shorebird species to feed on the intertidal flats in the bay and river at low tide. The banded rail habitat in mangrove saltmarshes in Pyes Creek, between the OHL land and the Okura boat ramp is difficult to traverse and few people visit this area on foot.

[351] Dr Lovegrove described the intertidal and salt marsh zones on the southern side of the Estuary as "reasonably narrow as the main channel is close to that side".[220] He described the large intertidal feeding area that lies just north of the OHL land across the river and extending northwards beyond Dacre Point, linking with the tidal flats of broader Karepiro Bay, noting that this outer Estuary can be waded at low tide, allowing people access between Karepiro Bay and the shoreline adjacent to the OHL land.

[352] While agreeing that some aspects of the development could potentially be mitigated Dr Lovegrove took the view that with 1,200-1,900 dwellings and perhaps 3,800 new residents on the southern side of the Estuary many more people would be accessing the southern shoreline and the wider Karepiro Bay area. He considered that this would adversely affect access to breeding and feeding habitats by coastal birds, with consequential adverse effects on the diversity and abundance of the bird species currently present.[221]

[353] Dr Lovegrove described the feeding and roosting habitat on the southern side

219 Lovegrove EIC at 7.16.
220 Lovegrove EIC at 7.17.
221 Lovegrove EIC at [7.2].

of the Estuary, directly adjacent to the OHL land, saying that New Zealand dotterels and variable oystercatchers use this area in autumn and winter. This area was also an alternative habitat to the larger area of habitat on the Karepiro Bay side of the Estuary, one of the earliest areas to be exposed during the tidal cycle, and is thus of value to New Zealand dotterels before they can move out into the wider inter-tidal zone. He stated that variable oystercatchers also roost along this coast and that it was a likely breeding area for the species.[222]

[354] Dr Craig responded that this was a "possible" rather than a "likely" breeding site.[223]

[355] Mr Don had similar views to Dr Lovegrove about the effects of an increase of residents and considered that this would increase the probability of disturbance to feeding, roosting, resting and nesting even with the best management intentions.[224] Noting that he expected a lower level of breeding success for New Zealand dotterel and variable oystercatcher, he cited studies carried out on flight initiation distances (or disturbance distances) when walkers approached four Australian species similar to those present at Okura (the four species were pied oystercatcher, bar-tailed godwit, sooty oystercatcher and black-winged stilt). The average disturbance distance was 44 metres, with a range of 25-92 metres. There was a high risk that similar disturbance distances would apply to birds in the Estuary leading to an effective loss of habitat over distances up to about 25-92 metres from the coastal margin.

[356] Conversely, Dr Craig did not accept that the increase in population would have adverse effects on coastal birds. He was of the view that development of the OHL land could have "measurable positive effects on bird life" and their habitat.[225] This would require the developer to initiate a predator control programme, for dogs to be appropriately controlled, for appropriate planting and signage to be provided at the foreshore and a no-cat policy. He considered the risks of adverse human effects on birds to have been overstated, and cited examples of locations where, properly protected from predators (including dogs), birds breed and roost in areas that were close to walking tracks, on beaches and even at the Auckland Tank Farm.[226]

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222 NOE at page 86.
223 NOE at page 780.
224 Craig EIC at [5.2.9].
225 Craig EIC at [3.31].
226 Craig EIC at [3.20]-[3.23].

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[357] He described his involvement in leading restoration work and predator eradication at Tiritiri Matangi Island, stating that public access to the site had continued despite the introduction of several rare species and the interaction between people and birds there had been positive. Research carried out on Tiritiri Matangi specifically to document the effect of the proximity of people on bird behaviour indicated that there was mixed response of the birds to human presence, with some moving closer and some further away, but that breeding success was as successful for birds near tracks as for those at a distance.

[358] Mr Don pointed out the differences between what he said was a managed island habitat on Titritiri Matangi and the shoreline environment at Okura – his view being that the two areas were not comparable in terms of the pressures on breeding birds and the species present.

[359] Referring to an Australian study cited by Mr Don, Dr Craig noted that the response of shorebirds to humans was less at beaches and foreshores where people were frequent users. He further noted that while Mr Don considered the area has a "high value habitat in its present condition" Mr Don had not mentioned the increase from 8,000 to 70,000 people using the centre of the area, namely the foreshore of Karepiro Bay and Weiti Beach, as having had a negative effect, but focussed on the number of people that may live on the OHL land, in an area that is "on the edge" of the area Mr Don considered to be high value habitat. Dr Craig also commented on the use of the Okura spit as a crossing point for walkers on the Okura Bush Track / Te Araroa Walkway, noting that this currently takes people directly past the nesting habitat of variable oystercatchers and NZ dotterels. He said no information had been provided by Mr Don or Dr Lovegrove about any adverse effects on birds there.

[360] Dr Craig said that when living in Auckland he was accustomed to seeing good bird life in all sorts of habitats, citing Tahuna Torea[227] as an example of bird habitat that is also a popular walking track and noting that wrybills can be seen feeding on the Auckland Airport runway, with birds taking advantage of any habitat which was available.

*Kite-surfing*

[361] The expert witnesses agreed that growth in kite surfing had the potential to

[227] NOE at page 800.

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disturb bird-life as a result of the OHL development, as more people would be able to access the foreshore directly from the OHL land. Citing an evaluation of 17 studies from five countries, including New Zealand, Mr Don said that birds perceive kite surfers as large predators and avoid them by taking long flights or leaving a site altogether.[228] In his view, unregulated kite-surfing had the potential to "significantly degrade the existing habitats of coastal birds as a result of continual disturbance" and that could increase as a result of the proposed development.

[362] Dr Lovegrove said that an increase in kite-surfing at the Karaka shell banks in the South Manukau harbour had been found to be disturbing migratory species such as godwits and preventing breeding of New Zealand dotterel for whom this was an important site.

*Cats and Dogs*

[363] Mr Don said that a large increase in the number of people living next to the Estuary could result in a proportionally large increase in the number of dogs. He estimated between 470 and 745 dogs could live there, based on the New Zealand average of 1.4 dogs per dwelling (with 28% of New Zealand households owning at least one dog).[229] He cited the findings of a technical report prepared for another Auckland project, where shorebirds responded to dogs more quickly (when they were further away) and with greater intensity than when people approach. Despite the bylaws excluding dogs from the Marine Reserve foreshore area he maintained there was a risk that the number of dogs both on-leash and off-leash would increase. Dr Lovegrove's view was that the number of dogs would inevitably increase in the coastal zone, where they could threaten wildlife.

[364] Dr Craig adopted a risk management approach on this issue. While agreeing that uncontrolled dogs could disturb nesting birds and could increase predation[230] he recognised that existing by-laws required dogs to be under the control of their owners at all times. In his view, education of dog owners to be sure they did not roam and secure fencing on properties was the easiest way to eliminate the risk from dogs. He cited the example of his own local community next to an estuary and beach, where a successful "responsible pet policy" had been adopted and public education initiatives

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228 Don EIC at [5.2.15]-[5.2.16].
229 This number does not appear to align with the number of dwellings which could be built on the OHL land.
230 Craig EIC at [3.7].

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commenced, and suggested a similar approach was available to the OHL development to avoid risks from dogs.

[365] All of the expert witnesses agreed that cats from the OHL development posed a significant risk to birdlife and all addressed possible means by which cats could be controlled. Dr Craig recommended the use of voluntary controls on pet cats, and responded in questioning that Todd Properties was prepared to commit to this initiative.[231] He said that feral cats were widespread and any increase in predation by pet cats on the OHL land would not be measurable. He added that the use of kill traps for cats along with voluntary cat control (cats kept inside at night) had been effective in his community.[232]

[366] The use of cat capture traps and cat kill traps was canvassed with Mr Don who described cat control in a bird habitat area adjacent to the Omaha Estuary where cats could access a dotterel nesting area at night. He said the cats are live-trapped and if identified as pets they are returned to their owners and if not they are "probably euthanized". Challenged that it would be necessary to have kill traps to do the job properly he said that while kill traps do work, in the long term the Omaha live-trapping and (selective) releasing model would work as well.[233]

[367] We note that there are no measures in the OHL Precinct Provisions for either the control or banning of cats. Nor did OHL elect to respond to the experts' recommendation in their 28 August 2017 JWS for dog management measures.

*Finding on Issue 3*

[368] We prefer the evidence of Dr Lovegrove and Mr Don about the effects of increases in the populations of humans, dogs and cats on the shoreline and intertidal areas. We expect these will adversely affect in a non-transitory and more than minor way how birds use the existing mosaic of habitat types.

[369] While we acknowledge that community-led predator control, along with responsible dog and cat management has the potential to assist in protecting avian life, we are far from convinced that such controls and the required levels of responsibility, education and management could be satisfactorily established and

231 NOE at page 783.
232 NOE at page 785.
233 NOE at page 385.

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maintained in what would be a well-populated urban environment.

[370] OHL proposes to provide access to and along the Estuary edges for significant numbers of people and has identified this as one of the benefits of its proposal. A walkway through the plantings along the coast would provide an alternative to walking along the shoreline and foreshore and this access to the broader intertidal area would be an attraction to recreating permanent residents of the adjacent development as well as to transitory recreationalists. Residents of the OHL development could also be expected to use the Estuary in kayaks and small boats. Kite surfing may also increase.

[371] We find that all of this increased activity from the urbanisation of the OHL land would inevitably have significant adverse effects on birdlife in the Estuary.

*Marine Benthic Ecology and Avifauna: Unitary Plan objectives and policies*

[372] As described above, the coastal areas where the proposed OHL development potentially impacts marine benthic and marine and coastal avifauna resources fall within three contiguous Significant Ecological Areas (SEA) overlays. In the interest of avoiding unnecessary repetition, we assess the proposal's congruence with relevant Plan objectives and policies (for both topics) in a single section.

[373] The RPS Urban growth and form provisions include Policy B2.2.2(2) which is to ensure that any relocation of the Rural Urban Boundary identifies land suitable for urbanisation in locations that:

> (g) [protect] natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character;
>
> (i) [ensure] that significant adverse effects from urban development on receiving waters in relation to natural resource and Mana Whenua values are avoided, remedied or mitigated.

*Comment:* We read these provisions as a high level strategic direction that, when considering proposals to relocate the RUB, scheduled resources like those in the SEA are to be protected and the significant adverse effects of development on receiving waters like the Estuary are to be avoided, remedied or mitigated. The first direction is strong and unequivocal. It is in the nature of a "bottom line". The second requires a finding or findings about the likely severity of effects - whether they are "significant".

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Notably, (i) is concerned with the adverse effects of urban development on receiving waters, natural resources generally and Mana Whenua values. It can be differentiated from the specific provisions for SEA in B7.2 Indigenous biodiversity as discussed below.

[374] The RPS Natural resources provisions have the following related and more specific provisions:

> B7.2.1 Indigenous biodiversity:
> (1) Areas of significant indigenous biodiversity value in terrestrial, freshwater, and coastal marine areas are protected from the adverse effects of subdivision use and development.
> (2) Indigenous biodiversity is maintained through protection, restoration and enhancement in areas where ecological values are degraded, or where development is occurring.

*Comment:* B7.2.1(1) reinforces that the scheduled SEA resources are to be protected from adverse effects. B7.2.1(2) adds a further dimension, namely that indigenous biodiversity - which includes the scheduled resources - is to be maintained by protection, restoration and enhancement where ecological resources are degraded. Relevantly Plan Figure 7.4.2 shows the Estuary as degraded[234] and the expert witnesses, other than Dr de Luca, agree it shows signs of sediment stress.[235] In the current proceedings, development could not be said to be occurring presently, but if the appeals succeed it would be enabled and seems highly probable.

> B7.2.2. Policies for indigenous biodiversity:
> (5) Avoid adverse effects on areas listed in ... Schedule 4 Significant Ecological Areas – Marine Schedule.

*Comment*: We interpret this as an unequivocal policy direction that adverse effects on the scheduled SEA resources are to be avoided.

> B7.4 Coastal water, freshwater and geothermal water includes Objectives B7.4.1:

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234 RPS B7.7 Explanation and principal reasons elucidates "While two classes of degraded areas have been identified, the distinction does not imply a ranking or any priority for action. It is important that both areas be considered together because of the dynamic and interconnected nature of coastal environments and because the classes may change over time as more knowledge is gained and as pressures on receiving environments change. There is evidence that even moderate levels of degradation can result in ecosystem level changes, and it is not yet known how reversible these changes might be".

235 Marine Ecologists' JWS June 2017.

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(1) Coastal water, ... [is] used within identified limits while safeguarding the life-supporting capacity and the natural, social and cultural values of the waters.
(2) The quality of ... coastal water is maintained where it is excellent or good and progressively improved over time where it is degraded.
(4) The adverse effects of point and non-point discharges, in particular stormwater runoff .... on coastal waters, ... are minimised and existing adverse effects are progressively reduced.
(6) Mana Whenua values, mātauranga and tikanga associated with coastal water, ... are recognised and provided for, including their traditional and cultural uses and values.

*Comment:* Important themes are to safeguard the life-supporting capacity and related values (natural, social, cultural) of coastal water, to maintain or where degraded improve coastal water quality, to minimize the adverse effects of stormwater runoff and redress existing adverse effects from such, and to recognize and provide for Mana Whenua values.

B8.3 Coastal environment Subdivision, use and development
B8.3.2 Policies
(5) Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown or little understood, but could be significantly adverse.
(6) (Summarized) is to avoid adverse effects that are significant on the Marine Reserve and to avoid, remedy or mitigate lesser effects.

[375] In our section on marine benthic ecology we found that while the sediment and heavy metal discharge modelling was very conservative and the effects of the modelled discharges on the benthic biota were well within agreed thresholds, there remained a degree of uncertainty about how cumulative effects and other (undefined) stressors might impact on the modelled results. Whether this uncertainty had the potential for the effects of discharges to cause the benthic health of the Estuary to reach a tipping point and consequently whether a precautionary approach should apply was arguable. We added that what may well tip the balance for us was the significance of the Estuary with its importance being formally recognised by a number of instruments including its Marine Reserve status and the SEA provisions of the Unitary Plan.

[376] For avifauna, we have found that the increased activity which would be generated from the urbanisation of the OHL land would have significant adverse

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effects on birdlife in the Estuary.

[377] Whether a precautionary approach should be adopted requires us to decide whether:

- The effects of the proposed development are "uncertain, unknown or little understood, but could be significantly adverse";
- The adverse effects are significant on the Estuary and should therefore be avoided;
- If they are lesser effects, they should be avoided, remedied or mitigated.

[378] We have been told that there are 18 species of bird found in the Estuary with Threatened or At-Risk status including two species which are Threatened, Nationally Critical (Grey duck and Shore plover) and one which is Threatened, Nationally Endangered (Reef heron).

[379] We have found also that urbanisation of the OHL land would have significant adverse effects on birdlife in the Estuary.

[380] If we were uncertain as to the extent of these adverse effects, taken together, as "the adverse effects of the proposal (on birdlife) should be avoided", we find that a precautionary approach would apply when assessing the effects of the proposed development on avifauna.

[381] With respect to the effects of the discharges on benthic biota, notwithstanding the evidence that the effects of these discharges as modelled would all be well within relevant thresholds, given the potential for there to be unknown cumulative and other stressor effects, and given the significance of the Estuary, we find by a small margin that a precautionary approach should apply when assessing the effects of the discharges.

[382] Unitary Plan Chapter D is concerned with overlays and includes the D9 Significant Ecological Areas (SEA referred to previously). The overlays implement the RPS B7.2 Indigenous biodiversity provisions outlined above. Inevitably there is a degree of repetition, but summarized, we note:

1) Areas of significant biodiversity value in the coastal marine area (CMA) are to be protected from the adverse effects of development, the indigenous biodiversity values of SEA's are to be enhanced, and Mana

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Whenua values recognised and provided for (D9.2 Objectives (1) – (3)).

*Comment:* we interpret the direction that the indigenous biodiversity values of significant ecological areas are to be enhanced as a strong, unequivocal policy direction and outcome to be attained.

2) Activities in the coastal environment are to be avoided where they would result in any of the following (Policy D9.3(9)) protecting SEA in the coastal environment):
   (a) a non-transitory or more than minor adverse effect on:
      - threatened or at risk indigenous species;
      - the habitats of indigenous species that are the limit of their natural range or which are naturally rare;
      - threatened or rare indigenous ecosystems and vegetation types, including naturally rare ecosystems and vegetation types;
      - areas containing nationally significant examples of indigenous ecosystems or indigenous community types; or
      - areas set aside for full or partial protection of indigenous biodiversity under other legislation, which includes the Long Bay - - Okura Marine Reserve.
   (b) any regular or sustained disturbance of migratory bird roosting, nesting and feeding areas that is likely to noticeably reduce the level of use of an area for these purposes.

*Comment:* We listed above the 18 bird species found in and around the Estuary that are either Threatened or At Risk on a national basis.

3) Activities in the coastal environment are to be avoided where they would result in significant adverse effects on the matters below and otherwise avoided, remedied or mitigated (Policy D9.3(10)). The matters are:
   - habitats that are important during the vulnerable life stages of indigenous species;
   - indigenous ecosystems and habitats that are found only in the coastal environment and are particularly vulnerable to modification, including estuaries, ... coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass and saltmarsh;
   - habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes including fish spawning, pupping and nursery areas;
   - habitats, including areas and routes, important to migratory species;
   - ecological corridors, and areas important for linking or maintaining biological

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values; or - water quality such that the natural ecological functioning of the area is adversely affected.

4) Subdivision, use and development are to be avoided where it will result in any of the following (Policy D9.3(11)):
   - any change to physical processes that would destroy, modify, or damage any natural feature or values identified for a Significant Ecological Area – Marine in more than a minor way; or
   - fragmentation of the values of a Significant Ecological Area – Marine to the extent that its physical integrity is lost.
5) And finally there is Policy D9.3(12) which requires that adverse effects of development on SEA-Marine values be managed taking into account:
   - the extent to which existing use and development already, and in combination with any proposal, impacts on the habitat, or impedes the operation of ecological and physical processes;
   - the extent to which there are similar habitat types within other Significant Ecological Areas – Marine in the same harbour or estuary or, where the significant ecological area - marine is located on open coast, within the same vicinity; and
   - whether the viability of habitats of regionally or nationally threatened plants or animals is adversely affected, including the impact on the species population and location.

[383] We are not confident that the OHL Precinct Provisions as currently drafted would protect the natural resources subject to the three SEA-M overlays from adverse effects in the sense of keeping them safe from harm or injury (Policy B2.2.2(2) and Objective B7.2.1(1)). This is particularly the case for avifauna for reasons we expand on below. The outcome is less certain and more nuanced in respect of effects on benthic biota.

[384] The Unitary Plan has a number of strong, unqualified directions where adverse effects are to be avoided, SEA enhanced and Mana Whenua values recognised and provided for. The OHL marine benthic ecology expert witnesses were almost universally firm in their opinions that the relevant natural resources would be protected. They repeatedly emphasized the conservative basis on which the sediment and metal contaminant modelling was done (combined catchment sources, with and without treatment, best practice erosion and sediment control management, reduced sediment loads post development, non-exceedance of 3 mm sediment deposition threshold, compliance with recognised SSC and metal contaminant

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thresholds). By themselves these factors deserve due weight. Dr Thrush and Mr West, however, were equally committed in their views that the modelling did not account for all credible eventualities, particularly low probability high consequence risks. They cited, for example, severity and frequency of rainfall events as impacted by climate change, the potential effects of "catastrophic" SRP structure failures, cumulative effects and multiple stressor interactions, and the potential for increased sedimentation and turbidity to create a tipping point from which the Estuary would not recover.

[385] While accepting that there is a significant degree of conservatism in many of the predictions of the OHL expert witnesses, their assessments were necessarily limited by the scope of the modelling undertaken and investigations described in evidence. This is especially so for sediment as opposed to the metal contaminants evidence. We find that the potential adverse sedimentation effects which concerned the expert witnesses for other parties are sufficiently credible to attract weight. There is a measure of uncertainty that all potential adverse effects would be avoided and the Estuary's SEA-M1 marine benthic resources protected.

[386] OHL's adoption of a WSD approach to post development stormwater management after modelling was completed has not told against the proposal. We accept Mr Roa's evidence that WSD is an enhancement of and retains application of TP10 methods. Rather, our reservations are founded on the concerns expressed by Dr Thrush and Mr West, corroborated by the previously cited Council (2013) Report which underpins related Unitary Plan provisions, that while guidelines of the type relied on by the OHL witnesses are:

> "...useful for assessing the effects of individual contaminants they do not take into account the cumulative effects of multiple contaminants or other stressors present at the same time ... so it is entirely possible for ecological health to be affected under ERC green conditions (Hewitt et al 2009)".

[387] We have not identified a positive effect that would cause the SEA to be enhanced.

[388] We are left with an enduring concern that a special place as recognised by its marine reserve classification and scheduled SEA may not be protected as the Unitary Plan requires and that the Estuary's Mana Whenua values may be put at risk.

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[389] B7.4.1 Objectives (2) and (4) for Coastal water are also relevant directing that water quality be maintained where good and progressively improved over time where it is degraded. Regrettably the Estuary is in the latter category. While OHL's case would not appear to address these objectives over the estimated nine-year development phase, we acknowledge that the expert witnesses agreed there would be a reduction in sediment yield post development relative to extant levels.

[390] The avifauna expert witnesses were equally polarized in their opinions. The SEA-M1 overlays expressly recognize the Estuary's valued, diverse, avifauna habitat and populations. Protecting and avoiding adverse effects on the multiple threatened and at-risk species resident in the Estuary, is dependent on at least two factors (Objective B7.2.1(1) and (2)):

- Maintaining the viability of the habitats which the birds rely on for feeding, breeding and fledging offspring. It is axiomatic that if the sedimentation (deposition and SSC) predictions of the OHL expert witnesses prove overly optimistic (and there is a degree of uncertainty that these could be), the habitats would be adversely impacted and not protected;
- Avoiding foreshore disturbance by human activity (potentially dog walking, incompatible forms of water-based recreation) and predation by cats and disturbance by uncontrolled dogs.

[391] We prefer the evidence of the Council, Forest and Bird and the Society expert witnesses on these matters to that of Dr Craig. We do not doubt the conviction with which his views were expressed and respect what he has achieved elsewhere but on this occasion his evidence did not resonate with likely effects in a well populated urban setting.

[392] We have found little or nothing concrete in the OHL Precinct Provisions or its case, that Threatened and At-Risk avifauna would be maintained through protection, let alone restoration and enhancement in what the Unitary Plan recognises as a degraded ecological environment as required by Objective B7.2.1(2).[236] It is axiomatic that the proposed esplanade revegetation above MHWS would not materially benefit avifauna in any significant way except possibly as an inland high tide roost if suitable

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236 Unitary Plan Figure 7.4.2, Marine degraded areas in Auckland and "Identification of Degraded Marine Receiving Environments", Working report 2013/009 which uses three ecosystem measures (marine water quality, sediment contamination and benthic health).

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land for this was included in the landscape design. Although the witnesses were staunchly divided we find that it is likely that adverse effects on avifauna would result.

[393] Mr Ashby's evidence on behalf of Te Kawerau Iwi Tribal Authority and Settlement Trust called by the Society was uncontroverted. Multiple cultural values attach to the Okura cultural landscape which Maori view holistically. Mr Ashby explained that the Okura River and Estuary have particularly high significance for the iwi and that the mauri of the river is a core element of its cultural value. He identified the catchment as a particularly valued marine habitat for native fish and bird species; and that these qualities are central to its taonga status. Archaeological sites along the southern shoreline are evidence of an historical association. Given the uncertainty about potential sedimentation effects and our adverse findings for avifauna, we expect that Mana Whenua values, matauranga and tikanga associated with the Estuary's coastal water, its traditional and cultural uses and values, would not be recognised or provided for by the OHL proposal especially with regards to avifauna. (Objective 7.4.1(6), Objective D9.2(3)).

[394] RPS Subdivision, use and development Policy B8.3.2 directs us to consider the purpose for which the Long Bay - Okura Marine Reserve is managed under the Marine Reserves Act and to avoid adverse effects that are significant in relation to those purposes and to avoid, remedy or mitigate other adverse effects. Those statutory purposes are:

> ... preserving, as marine reserves for the scientific study of marine life, areas of New Zealand that contain underwater scenery, 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

and further that:

> ... having regard to the general purpose specified in subsection (1), marine reserves shall be so administered and maintained under the provisions of this Act that—
>
> (a) they shall be preserved as far as possible in their natural state:
>
> (b) the marine life of the reserves shall as far as possible be protected and preserved:
>
> (c) the value of the Marine Reserves as the natural habitat of marine life shall as far as possible be maintained:
>
> (d) subject to the provisions of this Act and to the imposition of such conditions and restrictions as may be necessary for the preservation of the marine life or for the welfare in general of the reserves, the public shall have freedom of access and

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> entry to the reserves, so that they may enjoy in full measure the opportunity to study, observe, and record marine life in its natural habitat.

[395] For the reasons we have given above, we are not confident that the purposes of the Marine Reserve and the marine benthic ecology or avifauna in the Reserve would be safeguarded from significant adverse effects if the OHL proposal was to proceed or that lesser adverse effects would necessarily be avoided, remedied or mitigated.

[396] The strongly held, different opinions of marine benthic and avifauna expert witnesses was a striking aspect of the case. It would be fair to say that a degree of uncertainty attaches to likey adverse effects on benthic organisms but not avifauna where we have found that it is inevitable that there will be significant adverse effects from an OHL development. Our findings on the balance of probabilities in the former area are sometimes finely balanced. Where we have erred on the side of caution we find support in the RPS direction that we should adopt a precautionary approach in circumstances where effects on the coastal environment are uncertain, unknown or little understood but which could be significantly adverse (Policy B8.3.2(5)).

**Freshwater and Terrestrial Ecology**

*Background*

[397] Having previously discussed the proposed earthworks and related stream realignments planned by OHL, we now move on to address the potential effects of these works on the freshwater ecology of the affected streams

*The Parties' Positions*

[398] The Council's position was that OHL's proposed reclamation and stream realignments would have significant adverse effects on freshwater values and would not give effect to the National Policy Statement for Freshwater Management (NPSFM) or the Unitary Plan RPS. It said that there was considerable uncertainty as to whether the proposed mitigation measures would be successful in delivering environmental benefits.

[399] It contended that there were other earthwork options that would have less effects with the OHL proposal appearing to have been driven by urban density outcomes and that better freshwater outcomes would be achieved under the CLZ

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option.

[400] OHL submitted that the riparian protection and enhancement that was part of its proposal would result in superior freshwater and terrestrial ecology outcomes than currently existed. It was critical of the Council's expert witness, Dr Neale for using the Macroinvertebrate Community Index (MCI) as a measure of stream health, over the use of the Stream Ecological Value (SEV) approach adopted by its own expert witnesses. It considered that the Court could be satisfied that on the balance of probability its proposal would ultimately improve the ecological functioning of the streams above the status quo.

[401] Forest and Bird and the Society did not provide evidence on this topic.

*The Issues*

[402] We have identified the following issues for our consideration:

- *Issue 1: Will the proposed stream realignment mitigation measures proposed to be carried out on the OHL land sufficiently offset the effects of stream reclamation and urbanisation?*
- *Issue 2: Would a OHL or a CLZ development provide a better outcome for freshwater stream ecology?*

*The Expert Witnesses*

[403] Expert evidence on freshwater ecology was provided by:

- Dr M Neale (for the Council);
- Dr N Phillips (for OHL);
- Mr E Sides (for OHL).

and expert evidence on terrestrial ecology was provided by:

- Dr S Flynn (for OHL).

*Expert Witness conferences*

[404] We have discussed the modifications proposed for the streams on the OHL land (identified as Types A, B and C) in the stream modification section of this decision. As previously noted, whilst originally OHL had proposed to construct a series of wetlands for stormwater treatment, (including a perched wetland over the reclaimed Type B streams) this form of treatment was later discarded in favour of WSD.

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[405] Agreements reached by the freshwater ecologists at their first expert witness conference on 22 June 2017 about the originally proposed Type B streams wetland ceased to be relevant. Accordingly, these have been omitted in the following summary of the agreements reached at this conference:

- Most of the stream reclamations will be in headwater areas where loss of stream values is likely to be minor;
- Stream mouths often support relatively high ecological values compared with the upstream reaches, notably native fish communities. Impacts in these areas should be minimised, as is likely through the proposed coastal margin protection;[237]
- Streams within the project area are currently degraded and their values are within the range observed in rural streams in Auckland;
- Some adverse hydrological and water quality effects are unavoidable but their magnitude can be reduced through water sensitive management practices;[238].
- Likely adverse effects include increased contaminant loads, decreased baseflows and increased peak flows;
- Both the OHL and CLZ developments could result in an improvement in freshwater environment quality, but which would have the greater improvement could not be determined based on the information which was available;
- There are many different indicators of freshwater environmental quality each with benefits and limitations depending on the context of their specific application;
- If a proposed remediation strategy is predominantly focussed on riparian planting, the Stream Ecological Value (SEV) will predict a significant improvement as it weights riparian planting heavily;
- By comparison, macroinvertebrate community indicators may not predict the same degree of improvement, because they measure different aspects of freshwater quality.

[406] The joint statement prepared at the second conference on 6 September 2017

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237 Which the Court interprets as a reference to the proposed Open Space- Conservation Zone coastal fringe.

238 Which the Court interprets as application of the Water Sensitive Urban Design Principles described by Mr Wadan EIC at [2.12] ff.

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recorded the following:

- The magnitude of the effects from the removal of Type C streams will depend on the context and state of the streams. Dr Phillips, Mr Sides and Dr Neale agreed that in some cases within the OHL land, dams affect the connectivity and function of the streams so the effects will be lower;
- The reach downstream of the 220 metre pipeline pipe in the Type B streams is one of the higher quality reaches on the OHL land and any effects in that location should be minimised ... this should be provided for in the Precinct Provisions should the plan change be approved;[239]
- In the stream reaches where modification is not proposed a range of positive treatments are proposed, such as daylighting and riparian restoration, and sediment and stormwater management. While Dr Phillips claimed that there would be significant stream ecology benefits from these measures, Dr Neale thought otherwise;
- Dr Phillips claimed (and Mr Sides agreed) that the level of certainty provided by the structure plan for positive interventions related to best practice treatment and consequent outcomes for stream ecology were greater for the OHL proposal than for the CLZ, as under the CLZ there was no requirement for riparian planting or other stream treatments;
- While Dr Neale agreed there was greater certainty about the OHL interventions, he said that such measures were necessary to manage the effect of the OHL proposal and not for the CLZ option;
- Redfin bully (an At-Risk species) may be affected by increases in sediment during the construction phase although in the long term, there will be a reduction in sediment and the potential to improve habitat for this species;
- If the plan change was approved, the Court should provide direction to ensure management practices give priority to minimising potential effects on the redfin bully habitat (downstream end of reaches 6 and 7) during the construction phase in recognition of the conservation status of this species.

*Issue 1: Will the proposed stream realignment mitigation measures proposed to be carried out on the OHL land sufficiently offset the effects of stream reclamation and*

239 Precinct Activity Table 1527.4 proposes all Stream B management work be a RDA.

*urbanisation?*

[407] We have summarised the extent of the proposed stream modifications in our earlier section on stream modifications. In particular, we note that:

- 76% of permanent and intermittent streams will be retained and enhanced by riparian planting having a total length of 2,677 m (not including the protection of the 50% of ephemeral streams, addition of daylighted reaches and modified and enhanced Type B streams).
- The ratio of the proposed length of riparian planting (2,677 m) to the length of stream removed or reclaimed (834 m) is 3.2:1.

[408] In relation to the effects of reclaiming intermittent streams, Dr Neale explained that this may impact on the downstream environment. He said that the roles, functions and values of the headwaters of streams and rivers had been well-documented, and that collectively the headwaters determine the chemical, physical and biological integrity of the downstream waters[240]. He cited Auckland studies that showed that intermittent streams contained biological communities not significantly different from those in permanently flowing water and that intermittent stream communities were important in maintaining catchment scale diversity. He noted that the RMA definition of a river does not distinguish between permanent and intermittent streams and that the NPSFM applied equally to permanent and intermittent streams.

[409] Dr Neale went on to say that there are practicable alternatives for urban development that have not resulted in large-scale stream loss and reclamations of the type proposed by OHL. Other developments have been implemented under the Housing Accords and Special Housing Areas Act 2013 in accordance with the provisions of the Unitary Plan, as this was a special consideration in the legislation. He considered that the Precinct Provisions were inconsistent with the region-wide approach to stream management in the Unitary Plan, as the Precinct Provisions sought to make this a permitted activity when it was a non-complying activity for all other parts of Auckland.[241]

[410] He cited Policy B7.3.2(4) which sought to "avoid the permanent loss of rivers and streams" and Policy B7.3.2(5)(d) which was to "maintain and where appropriate

240 Neale EIC at [8.2.11].
241 Neale EIC at [8.2.14].

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enhance" freshwater systems.

[411] He further noted that the Auckland-wide rules sought the following:

- To avoid the reclamation of rivers and streams unless there is no practicable alternative (Objective E3.2(6);
- To avoid the reclamation and drainage of the beds of lakes, rivers, stream and wetlands (Policy E3.3(13)) unless a number of criteria apply, including that "there is no practicable alternative".

[412] He considered that the physical loss of stream length is inconsistent with the objectives of the NPFSM in relation to the national value of ecosystem health. Further, the effects of the proposed stream modification and removal were greater than had been considered by OHL.

[413] He described the effects of the proposed urbanisation as "Urban Stream Syndrome" which he said was well recognised.[242] This syndrome included a flashier hydrograph with lower low flows, increased intensity of high flows causing channel scour and erosion, elevated concentrations of nutrients and contaminants and reduced biotic richness, with increased dominance of pollution-tolerant species.

[414] He referred to the Council's State of the Environment monitoring, carried out at 90 sites across Auckland, from which he concluded that wherever urbanisation had occurred the quality and health of fresh water systems had declined. This included those at recent development sites such as at Flat Bush and Greenhithe where a water sensitive urban design approach and technology had been adopted to, he said, "manage" the impacts.

[415] Mr Sides agreed that urban development and the increase in impervious surfaces would have some adverse effects on streams due to changes in flow and water quality. He said that although these were likely to be minimised through WSD, residual effects on water quality would likely limit the degree to which stream ecological values could be improved.[243] He said that riparian enhancement would improve some stream functions and mitigate the overall impact on ecological values as well as off-set the effects of stream loss. He considered that a WSD approach was

242 Neale EIC at [8.17].
243 Sides EIC at [5.1].

appropriate and that the retention of most of the streams on the OHL land provided a natural framework for such an approach.

[416] In Mr Sides opinion, the effects of stream loss were likely to be minor, as the current status of the streams was low, and the proposed riparian rehabilitation and culvert removal would have a net positive effect. Overall, he said that the potential effects of the OHL development would be at too small a scale to have any significant effect on the threat status or rate of decline of redfin bully or inanga[244] adding that redfin bully was not sensitive to exposure to high levels of suspended sediments.[245]

[417] Dr Neale disagreed, pointing out that the study on which Mr Sides had relied about redfin bully was based on previous findings that this and other species were scarce in New Zealand rivers with high sediment loads. He said that Mr Sides' observation that post earthworks there would be a net reduction in sediment runoff from the OHL land would seem to overlook the potential for adverse effects on redfin bully and other species during the actual earthworks.

[418] At their 6 September conference, all of the ecologists agreed that during construction there would be ecological risks at the mouth of the Type B stream with a recommendation that the Precinct Provisions be amended to require stringent management methods to mitigate these risks.

[419] Dr Neale cast doubt on the effectiveness of the riparian planting that Mr Sides said would be carried out along 67% of permanent and intermittent streams. He said that planting might not achieve the improvements to the freshwater ecosystem that the OHL expert witnesses had described.[246] Citing studies that had been undertaken comparing restored urban streams, he said that these studies had not found significant differences in stream values between restored and unrestored stream reaches. He said that Mr Sides was relying on the stream daylighting and 3.6 km[247] of riparian planting to bring the residual effects to "minor".

[420] The efficacy or otherwise of riparian revegetation was pertinent to Dr Neale's criticism of the use of the SEV method to predict future values in the streams as the

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244 Sides EIC at [7.3.4].
245 Sides EIC at [2.11].
246 Neale Rebuttal at [6.1].
247 Note: Mr Sides says that this length includes additional protection for nearly 50% of the ephemeral reaches (EIC at [8.2]).

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outcome of this method was significantly weighted by the inclusion of riparian revegetation as a driver of improved freshwater habitat quality. Dr Neale preferred to use macroinvertebrate monitoring and indices to measure stream health as these related directly to the stream itself. He added that the SEV method predated the NPSFM and that the latter adopts the use of macroinvertebrate indices (such as the Macroinvertebrate Community Index MCI) as a key monitoring tool. It also had a compulsory national value of "ecosystem health" that was exclusively focused on achieving in-stream outcomes.

[421] Further, in relation to riparian enhancement, Dr Neale noted that the degree to which riparian planting would take place was not known, in terms of either area or location, neither was it known how or by whom such planted areas would be maintained. As a result, it was unclear whether the ecological benefits that OHL claimed would result from planting would be realised over and above those gained simply from fencing off the 10 metre riparian area on either side of a stream.

[422] Dr Neale also cast some doubt on the efficacy of daylighting of streams, citing his own research in Auckland streams. He reported a change in the macroinvertebrate community after daylighting but little improvement in stream ecological health over time. Substantial improvement in health only occurred where forested catchments were present upstream of the daylighted stream reach (which they were not, on the OHL land). In relation to the value of a forested upper catchment, he referred to a study cited by Mr Sides which showed that riparian planting "more than doubled the number of redfin bully". Dr Neale pointed out that the stream reach in that study was immediately downstream of intact native forest and benefited from its natural hydrology, water quality and source of colonists.

[423] Dr Phillips concluded that the effect on freshwater assets of the Okura precinct, as a whole was that while a small number of individual stream sections would be lost or modified, the proposed development option would result in better outcomes for those assets.[248]

[424] She described her SEV surveys and analyses of two permanent and four intermittent stream sites on the OHL land and her qualitative assessment of the three ephemeral streams (for which she noted SEV analysis was inappropriate). She

[248] Phillips EIC at [2.36].

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carried out baseline surveys then with those results, further analyses to predict the likely outcome of the proposed OHL and the approved CLZ developments. She told us that SEV scores range from 0 to 1, with 1 denoting the maximum ecological health value and 0 the minimum.

[425] Her predicted overall SEV scores for the outcome of the proposed OHL development were considerably higher than the baseline scores, while scores for SEV under the CLZ development remained similar to the baseline scores (with the exception of one site).

[426] SEV scores were made in four categories, hydraulic, biogeochemical, habitat provision and biodiversity. We note that in the surveys quoted by Dr Phillips, in the biodiversity category the only input was for riparian planting. As the ecologists agreed at their conferencing, the use of riparian planting as a factor in the biodiversity score can result in an overestimate of an SEV score for the streams under the OHL proposal.

[427] Dr Phillips did not include a calculation of the Environmental Compensation Ratio required to compensate for the loss of the Type C streams to be removed (as noted by Dr Neale).[249] We do not know what the outcome of such a calculation would be in terms of the length of Stream A channel to be enhanced.

[428] Further, we note that the Council publication TR2011/009 referred to in Dr Phillips' evidence,[250] which describes the SEV approach in detail, suggests that if SEV values are low it may not be feasible to create a significant improvement in ecological performance (section 6.5.3 of TR2011/009). For that reason, if the SEV value at the subject site is lower than 0.4 that publication recommends a different location for an offset, where a significant improvement can be achieved.

[429] The baseline SEV overall scores for the OHL 6 sites were all just above or just below 0.4, which puts their enhancement on the borderline between "worthwhile" (to be enhanced as an offset) and not. The same publication indicates that where impervious surfaces caused by urban development in the catchment above the stream to be enhanced are greater than 25%, then it is likely that the potential for

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249 Neale Rebuttal at [7.6].
250 Phillips EIC at [3.7].

restoration of ecological functions will be very low.

[430] Dr Neale's view was that riparian planting *per se* will not improve the freshwater values of streams. His experience is that a thick grass cover may provide as much or more benefit to stream habitat quality in relation to preventing stream erosion, filtering nutrients / sediment / contaminants and improving macroinvertebrate communities.[251]

[431] We note that the evidence and the joint statements refer to "restoration" which implies a more comprehensive approach to revegetation than simply riparian planting.

[432] Dr Flynn (a terrestrial ecologist) provided more detail about the area and type of planting to be carried out in the riparian areas (and the coastal reserve). She stated that riparian planting would cover seven hectares and that this would increase the extent and complexity of terrestrial habitat, with benefits for birds, insect life and potentially lizards. She added that the open space areas and coastal edge would be subject to master planning to refine management of these areas and how they were to be accessed.

[433] Dr Flynn concurred with Dr Craig that pest control and the recommended pet control (by which we presume she means cat control) would improve viability of the habitat for birds and other fauna within the property and the associated coastal margin. The restoration of forest and wetland habitats would also improve habitat value for species such as banded rail and common bush birds and there would be an improvement of terrestrial habitat value through riparian planting. Dr Flynn talked about the desirability of creating a mosaic of different habitat types and greater biodiversity in her response to questions[252] rather than using a simple mix of shrubby species as has commonly been done in the past. She said she expected master-planning to cover these matters in detail and said she expected that the Court process could give some assurance as to what should be included in a master plan.

*Finding on Issue 1:*

[434] Mr Sides told us that riparian enhancement of streams is planned over a length of 3.6 km and a width of 20 metres or a total of 7.2 ha. But we note that the Precinct

[251] Neale Rebuttal at [5.1].
[252] NOE at page 963.

Provisions do not appear to achieve this. They require (I572.6.3 (2)) "As part of any works in Stream Types A-B in Precinct Plan 1 – Stream Management, the provision of riparian planting 10 m either side of the centerline." This does not appear to require riparian enhancement anywhere other than where works are carried out. We also note (I527.6.3 (7) New reclamation or drainage of streams (a) Stream Type C (ii) "The extent of stream restoration of Streams A or B within the Precinct, to compensate for the loss of aquatic habitat of Stream C, shall be determined in accordance with ARC TP302, making use of the Stream Ecological Valuation and Environmental Compensation Ratio methodologies". It is not clear that together the requirements of I527.6.3 (2) and I527.6.3 (7) (ii) would require the riparian enhancement of 2,677m x 20 m of stream. If this appeal was to be approved, amendments would be required to the Precinct Provisions to ensure that the length of stream channel and area of vegetation described in Mr Sides' evidence was clearly defined.

[435] Dr Flynn made reference to a total of 7 ha of riparian / enhancement planting. We presume this includes planting other than the areas mentioned above, perhaps around part of the shoreline. While the area of terrestrial habitat to be created and the species to be used do not necessarily speak to the freshwater values that may be targetted, we concur with her conclusion that there would be value obtained for native birds, potentially for reptiles and for invertebrates from well-designed planting and restoration of coastal and riparian areas.

[436] There is no requirement specified for native species to be used for planting although Dr Flynn's evidence made it clear this is what she expects to occur to achieve the benefits she has stated.

[437] Dr Flynn recommended that the detailed ecological design phase include identification of sensitive shoreline areas to be screened with coastal planting, the identification of opportunities to expand and link existing and restored bush areas and the diversification of the present habitats. We see little or nothing in the Precinct Provisions that would secure these outcomes with confidence beyond 1527.8.1(1)(c) Matter for discretion that references "master planning of the open space network".

[438] We take note of Dr Neale's concern that the riparian enhancement may not achieve the outcomes for aquatic biota that the OHL witnesses have attested to. Given that the SEV values are low and the potential for successful riparian planting may be limited, it is our view that there should be policy direction in the Precinct

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Provisions requiring detailed planting plans to achieve the outcome that Dr Flynn envisages including establishment of ground-covering, stabilising native species along the stream edges and tiered vegetation in the remainder of the riparian cover all overseen by a professional ecologist.

[439] The potential for riparian planting to achieve OHL's envisaged outcomes for aquatic biota, could be affected by the extent of impervious areas above the stream reaches to be enhanced. While our understanding is that the proposed WSD treatment methods should be capable of attenuating and treating flows from those areas, we would expect this consideration to have been made explicit as a policy direction in the Precinct Provisions.

[440] We were surprised by Mr Sides' comment that the potentially adverse effects of the OHL development on the redfin bully and inanga would make no difference to the threat status of decline of those species. Gradual decline results from (among other things) a reduction in the availability of suitable habitat and/or its quality – this can occur as small, apparently "insignificant" changes occur over time (death by a thousand cuts) - and urban development is a classic contributor to such change.

[441] The presence of two At Risk fish species as well as koura and several other fish species noted in Dr Neale's evidence means that very careful management of the earthworks would be required.

[442] In particular, as recommended by the ecologists, any modification to the Type B stream in the vicinity of its lower reaches would need to target the protection and enhancement of habitat for those species, with efforts made to improve stream morphology where that would benefit habitat quality. If the appeal was to be approved, the Court would require further detail to be included in the Precinct Provisions about the methods and outcomes for this.

[443] As we have identified in previous sections of this decision, the means by which the long-term management of the planted areas would be carried out and the responsibility for ensuring that long-term maintenance occurs have not been defined. These need to be before we can be satisfied that OHL's promised ecological outcomes will result.

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*Issue 2: Would the OHL or CLZ development achieve a better outcome for freshwater stream ecology?*

*Discussion and Finding*

[444] In their first joint conference, the expert witnesses agreed that:

> Both the proposed (OHL) and permitted (CLZ) developments could result in an improvement in freshwater environment quality, but which would have the greatest improvement could not be determined based on current information. The quality of the freshwater environment is dependent on the degree of implementation and effectiveness of water sensitive design, scale of stream modification and benefits of stream remediation. Because of uncertainties in those factors it is difficult to distinguish between the two scenarios.

[445] We can take this matter no further other than to accept the advice of the expert witnesses that there would be uncertainties in each scenario which made it difficult to distinguish between them.

*Freshwater and Terrestrial Ecology: Assessment and Findings against Relevant Objectives and Policies*

[446] Although there are no scheduled significant terrestrial indigenous biodiversity values affected by the proposal requiring protection, RPS Objective B7.2.1(2) applies, namely that:

> (2) Indigenous biodiversity is maintained through protection, restoration and enhancement in areas where ecological values are degraded, or where development is occurring.

[447] The uncontested evidence is that streams within the OHL and FUZ land are degraded.[253]

[448] Specific RPS Objectives require that degraded freshwater systems are enhanced, the loss of freshwater systems is minimized; and that the adverse effects of changes in land use on freshwater are avoided, remedied or mitigated (Objectives B7.3.1((1) – (3)). These matters are to be secured through policies for:

> a) The integrated management of land use and freshwater systems by avoiding development where it will significantly increase adverse effects on freshwater systems, unless these adverse effects can be adequately mitigated [Policy

[253] Freshwater Ecologists, JWS 22 June 2017 p JWS0032 Section 2

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B7.3.2(1)(d)].

b) The management of freshwater systems where the permanent loss and significant modification or diversion of ... streams (excluding ephemeral streams), ... and their margins is to be avoided, unless all of the following apply [Policy B7.3.2(4)]:
   (a) it is necessary to provide for:
      (i) the health and safety of communities; or
      (ii) the enhancement and restoration of freshwater systems and values; or
      (iii) the sustainable use of land and resources to provide for growth and development; or
      (iv) infrastructure;
   (b) no practicable alternative exists;
   (c) mitigation measures are implemented to address the adverse effects arising from the loss in freshwater system functions and values; and
   (d) where adverse effects cannot be adequately mitigated, environmental benefits including on-site or off-site works are provided.

[449] We note that Policy B7.3.2(4) does not apply to ephemeral streams which are generally found in headwaters.[254] We also note that for other streams permanent loss, significant modification or diversion is to be avoided unless all of the factors listed pertain. Making reference to alternative earthworks designs, Mr Williams (OHL's infrastructure engineer) stated that consideration was given to retaining all streams on-site but that:

> ... this is not viable due to the usual ground stability issues encountered with the underlying soil, which if not addressed would likely undermine roads and building platforms, quarantining a much larger proportion of the site. These soil and slope conditions are common in greenfield areas in the NE bays area, such as Okura, Weiti and Long Bay.[255]

[450] Although possibly not stated directly, we apprehend that OHL considers the stream modifications and diversions it proposes to be necessary to provide for the safety of the intended community, the sustainable use of land and resources for development purposes and possibly infrastructure (Policies B7.3.2(4)(a)(i),(iii) and (iv)) and that no practicable alternative exists (Policy B7.3.2(4)(b)).

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254 These include Streams 21a, 23a, 23b, 20b, 18, 17a, 10a, 10b, 12b,13a, 26, 28a, 30a, 8a,6, 32, 9, 3a and 1.

255 Williams EIC Section 3 at 11.51 ff.

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[451] If the land is to be developed it must be done safely and sustainably. Importantly, these matters need to be secured while also enhancing, restoring and possibly offsetting the degraded freshwater systems described in evidence. On our reckoning, 834m of intermittent streams are to be removed with 1,544m retained and enhanced, 670m of ephemeral streams are to be reclaimed and 655m retained and enhanced.

[452] On the credit side of the freshwater ecology equation, OHL points to the proposed daylighting of 312 m of piped streams and the revegetation of 2,677 m of riparian stream margins to a minimum width of 20 m occupying some 7 ha (Policies B7.3.2(4)(a)(ii), (4)(c) and (4)(d)). Daylighting is a welcome likely positive effect but we have been unable to conclude on the evidence that the proposed riparian planting and other freshwater management measures proffered would:

- Be implemented in the manner assumed by OHL expert witnesses absent specific Precinct Provisions specifying outcomes to be achieved. This concern is exacerbated for riparian planting by uncertainty around a future open space management entity and attendant establishment and maintenance considerations;
- Be any more efficacious in providing improved aquatic habitat than riparian growth likely in conjunction with CLZ development. Whilst possibly counterintuitive at first blush, we prefer Dr Neale's evidence in this regard based on his careful assessment of a broader range of considerations than Dr Phillips' SEV projections made in a marginally effective context for achieving improved ecological performance;
- Protect at risk redfin bully habitat from upstream sedimentation during (and possibly post) earthworks and inanga habitat in the lower reaches and at the mouth of the Type B stream;
- Achieve enhanced and restored outcomes given the probable extent of impervious development above affected catchments and the correspondingly low potential for restoring ecological functions. Policy B7.3.2(6) also seeks the latter outcome where practicable when development, change of land use, and subdivision occur.

[453] We have concluded that because Policy B7.3.2(4) generally requires avoidance of the permanent loss, significant modification or diversion stream effects, the policy is unlikely to be met. For those parts which are relevant, we have come to

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the same conclusion regarding Policy B7.3.2(5) for managing the likely effects of development, including discharges and activities in stream beds and Policy B7.4.2 for the integrated management of subdivision, use and development and freshwater. With regards the latter, OHL has concrete plans for the provision of utility services and has undertaken an exercise akin to catchment management planning as part of its structure plan.[256] We are not confident however that as formulated, the Precinct Provisions would control land use and discharges to minimise the adverse effects of runoff on freshwater ecology or progressively reduce existing adverse effects where freshwater and coastal water are degraded (Policy (1)(c)).

[454] Policy B7.4.2(2) is to give effect to the NPSFM by establishing and undertaking the matters listed. In its opening legal submission, the Council explained that the NPSFM's high level outcomes are incorporated into the Unitary Plan in B7.3 Freshwater Systems which we have addressed above.[257] Counsel also alerted us to amendments to the NPSFM which came into effect in 2017 that add a macroinvertebrate policy (CB3) and changed others (CB1) on the same subject. Policy CB3, amongst other things, requires regional councils[258] to adopt methods to address freshwater MCI scores below 80.[259] Policy CB1 is concerned with establishing monitoring methods including for macroinvertebrate communities. We apprehend that these and related NPSFM matters are still to be implemented fully by Council[260] but note the congruence between the NPSFM directions and Dr Neale's evidence on the significance of MCI findings relative to SEV projections. This appears consistent with Policy E1.3(1) Freshwater quality and ecosystem health interim guidelines:

> (1) Manage discharges, until such time as objectives and limits are established in accordance with Policy E1.3(7), having regard to:
>
> (a) the National Policy Statement for Freshwater Management National Bottom Lines;
>
> (b) the Macroinvertebrate Community Index as a guideline for freshwater

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256 The stream management plan referred to by OHL witnesses.

257 Counsel for Auckland Council, Opening submissions 14 September 2017 at [6.16] ff.

258 Of which the Auckland Council is one.

259 Common Bundle Volume 1, Tab 3 "Okura: Assessment of Ecological effects", (November 2915) Table 2 shows MCI score less than 80 as "poor quality, probable severe pollution".

260 Refer Policy E1.3(7) Water quality and integrated management which is:
(7) Develop Freshwater Management Unit specific objectives and limits for freshwater with Mana Whenua, through community engagement, scientific research and mātauranga Māori, to replace the Macroinvertebrate Community Index interim guideline and to give full effect to the National Policy Statement for Freshwater Management. Note 1 Policy E1.3(7) above does not preclude the use of the Macroinvertebrate Community Index as a Freshwater Management Unit-specific objective/limit in future.

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ecosystem health associated with different land uses within catchments in accordance with Policy E1.3(2); or

(c) other indicators of water quality and ecosystem health.

*Comment:* It is accepted that the SEV assessment method supported by Dr Phillips falls within (c) but note it is not expressly recognised:

(2) Manage discharges, subdivision, use, and development that affect freshwater systems to:

(a) maintain or enhance water quality, flows, stream channels and their margins and other freshwater values, where the current condition is above National Policy Statement for Freshwater Management National Bottom Lines and the relevant Macroinvertebrate Community Index guideline in Table E1.3.1 below; or

(b) enhance water quality, flows, stream channels and their margins and other freshwater values where the current condition is below national bottom lines or the relevant Macroinvertebrate Community Index guideline in Table E1.3.1 below.

Table E1.3.1 Macroinvertebrate Community Index guideline for Auckland rivers and streams

| Land use | Macroinvertebrate Community Index Guideline |
|---|---|
| Native forest | 123 |
| Exotic forest | 111 |
| Rural areas | 94 |
| Urban areas | 68 |

[455] Also relevant are the Auckland-wide Lakes, rivers, streams and wetland provisions in Unitary Plan Section E3. The Section has Regional Plan objectives and policies with similar themes to those in the RPS assessed above, namely to protect resources with high natural values; restore, maintain or enhance streams with lesser natural values; and for significant residual adverse on streams that cannot be avoided, remedied or mitigated to be offset. Reclamation and drainage of the bed of streams is to be avoided unless there is no practicable alternative (Objectives E3.2(1) – (6))

[456] Our preceding findings are based on the evidence before the Court. We have also had regard to the Introduction to Section E3 which helpfully sets out:

> In urban Auckland lakes, rivers, streams and wetlands provide an important component for the assimilation and conveyance of stormwater and form part of the overall stormwater network. Streams have also been piped and filled over to reclaim

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> land for urban land development and have been modified to accommodate infrastructure such as roads, stormwater ... and other utility services. Urban streams nevertheless continue to provide important ecosystem services and can provide meaningful ecological and biodiversity values.
>
> There is a balance to be struck between the need to provide for the ongoing growth of urban Auckland, including the requirements of infrastructure, and the protection, maintenance and enhancement of lakes, rivers, streams and wetlands. It is important that development occurs in a sustainable manner which should involve, where practicable, the retention and enhancement of lakes, rivers, streams and wetlands.

[457] We are mindful that the appeals are concerned with plan formulation and not a resource consent application or applications, where greater detail would normally be expected from and be provided by a proponent. In the current situation, it is incumbent on the Court to test the proposal against relevant objectives and policies and for the appellant to provide adequate evidence that its case should succeed. It is questionable whether that threshold is achieved for freshwater ecology.

**Water Supply and Wastewater Disposal**

*Background*

[458] In this section of our decision we examine how OHL proposes to provide water supply and wastewater disposal infrastructure if its development was to proceed.

*The Parties' Positions*

[459] We are unaware of water and wastewater disposal infrastructure having been addressed in the parties' legal submissions.

*The Expert Witnesses*

[460] Evidence on these two items of infrastructure was provided by Mr M Williams (for OHL).

*Water Supply*

[461] Mr Williams advised that the OHL site would be serviced with water provided through an extension of the dedicated main feed being installed from Ashley Avenue to Vaughans Road in the Long Bay development. He said that this had been discussed with Watercare and confirmed as the appropriate network to provide for

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OHL's needs.[261]

*Wastewater Disposal*

[462] Wastewater from lots in the OHL development would be conveyed by a gravity system to a pump station located at the northern end of the site. From here it would be pumped via a rising main to Vaughans Road where it would connect with the Long Bay gravity sewer network. Mr Williams confirmed that the Long Bay network had been sized to accommodate the OHL (and Weiti) developments.[262]

*Discussion and Finding*

[463] Mr Williams was not questioned by any of the parties about his water supply and wastewater disposal evidence and nor did we. His evidence is accepted as submitted.

*Water Supply and Wastewater Disposal: Assessment against relevant Objectives and Policies*

[464] Suffice to say that this was not a greatly disputed aspect of the case. The utility services OHL proposes give effect to RPS Urban growth and form Objective B2.2.1(1)(c) and Policy B2.2.2(2)(d) for relocation of the RUB. The latter being "to support the efficient provision of infrastructure".

[465] Unitary Plan Appendix 1: Structure plan guideline under the heading Matters to identify, investigate and address has Section 1.4.7 infrastructure. Utility services are discussed in the OHL report filed in support of its RUB relocation proposal.[263] We note Watercare Services Limited's advice that it would allow a connection to the trunk wastewater assets for 3,000 dwellings/7,500 people in the combined Long Bay and Okura areas and that Long Bay is projected to accommodate approximately 1,800 – 2,000 dwellings. There is rather less in the report on "the location, scale, function and provision of community facilities, including educational, health, welfare and cultural facilities ... to cater for the needs of communities in the structure plan area and neighbouring areas".[264] We were not greatly assisted by Dr Phillips on the ability of Long Bay primary school to service both Long Bay and Okura as there had been no

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261 Williams EIC at [6.9] [6.10].
262 Williams EIC at [6.6]- [6.8].
263 Okura Structure Plan: prepared to support determination of the Unitary Plan Rural-Urban Boundary and Urban Zoning, Todd Property, November 2015 at [3.2.2.7].
264 Open space proposed is well illustrated.

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consultation with either the Board of Trustees or Ministry of Education on the matter.[265]

**Traffic and Transportation**

*Background*

[466] In this section of our decision we examine the measures which would be required for upgrading the surrounding roading network to provide for safe and efficient traffic operations in the network including access to the OHL land. We also examine transportation issues within the site and its connections to the adjoining Long Bay development.

*The Parties' Positions*

[467] The Council noted that cost estimates for the surrounding roading network upgrades required to accommodate the OHL development varied from $34.3 m plus land purchase costs (Mr Peake) to between $6.8 m and $26.7 m (Mr Clark). The Council supports the evidence of its Expert Witness, Mr Peake.[266]

[468] Irrespective of the final cost, the Council pointed out that funding issues remain outstanding and that RPS Policies B2.2.2(2) and B3.3.2(5) have not been given effect to. Its position was that agreement between Auckland Transport and developers would normally be in place before land was live zoned for development. It noted that live zoning provided an expectation that land would be serviced. In the absence of funding agreements with the developer this can create difficulties for the Council and Auckland Transport.[267]

[469] OHL noted in its legal submission that at their second joint witness conference, the transportation Expert Witnesses confirmed that the only outstanding issue was funding which they said was outside their expertise.[268]

[470] OHL also said that the upgrade of Vaughans Road was required not just for the OHL land but also for the adjoining development at Long Bay.[269] The Council

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265 NOE at page 982 ff.
266 Council Closing Legal Submission at [12.2].
267 Council Closing Legal Submission in Reply at [12.4] and [12.5].
268 OHL Submission at [13.1].
269 OHL Submission at [13.4].

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responded that Mr Donnelly (for OHL) had confirmed during questioning that this was not required by Long Bay consent conditions. Mr Clark however deposed it was recognised in reports to Council that upgrading Vaughans Road would be necessary when Long Bay made the required connection to it.[270]

*Expert Witnesses*

[471] Expert evidence on these issues was provided by:

- Mr I Clark (for OHL);
- Mr M Peake (for the Council).

*The Issues*

- *Issue 1: What mitigation measures would be required for the safe and efficient operation of the surrounding roading network to accommodate the increases in traffic generated by the OHL development?*
- *Issue 2: How should transport mitigation measures external to OHL land be funded and is this material to the Court's function on the current appeals?*
- *Issue 3: How well do the proposed Precinct Provisions address traffic and transportation?*

*Road Access to the Site*

[472] The Expert Witnesses agreed that the primary road access to the OHL land would be east along Okura River Road from its intersection with East Coast Road (SH25) to the intersection with Vaughans Road and then along Vaughans Road to the site.

[473] At its intersection with Vaughans Road, Okura River Road branches left in a north-westerly direction before terminating at Okura Village.[271]

[474] The road network affected by an OHL development would also include Glenvar Road which runs east to Long Bay from its intersection with East Coast Road just south of the Okura River Road intersection.

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271 Transport JWS 24 August 2017 at [5].

*Traffic Modelling*

[475] Mr Clark modelled the roading network using Saturn[272] to establish the potential effects of traffic distribution and mitigation measures from a 1,300 household development at Okura. When Mr Peake pointed out that the traffic distribution in this model did not appear to be logical during the afternoon peak period, Mr Clark agreed to re-run the model to test the sensitivity of changes to some of the input parameters.

[476] Based on the findings from this additional modelling, both Expert Witnesses agreed that provided the Okura River Road and Glenvar Road intersections with East Coast Road as well as Okura River Road and Vaughans Roads and the Okura River Road/Vaughans Road intersection were all upgraded, the network could safely manage a 1,300 household development.[273]

[477] The two witnesses endeavoured to assess the potential effects of traffic distribution and mitigation measures for Mr Mead's suggested upper limit of a 1,900 household development at Okura (although Mr Clark's advice from OHL was that an upper limit of 1,900 households was unlikely or impractical).[274]

[478] With the unknowns of the dwelling make-up (the number of stand-alone dwellings compared with the number of terrace houses) and the potential trip rates for each type of dwelling (per hour in the peak hour) they agreed that it was not possible to establish with any degree of certainty the effects of trip generation for a 1,900 household development. With these uncertainties, they were unable to decide whether a 1,900 household development could be satisfactorily accommodated by the existing road network.[275]

*Timing of Mitigation Measures*

[479] Irrespective of the number of households developed on the Okura land, the timings recommended by Mr Peake for the implementation of the network upgrade mitigation measures were:[276]

- Upgrading Okura River Road and Vaughans Roads to two-way urban standard – before the first houses were occupied;

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272. Saturn is a traffic simulation computer model for evaluating *traffic* management schemes.
273 Transport JWS 24 August 2017 at [2].
274 Clark EIC at [7.7].
275 Transport JWS 24 August 2017 at [3].
276 Peake EIC at [11.1].

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- Upgrading the East Coast Road/Okura River Road intersection – before 300 houses had been occupied;
- Upgrading the Okura River Road/Vaughans Road intersection from a priority controlled intersection to a roundabout – before 500 houses were occupied;
- Upgrading the East Coast Road/Glenvar Road/Lonely Track Road intersection – before 400 households had been occupied if the Vaughans Road speed limit was 50 km/h or 500 households if the speed limit was 70 km/h.

[480] The final designs for the two East Coast Road intersections would depend on the exact number of Okura households to be developed whereas the designs for the upgrade of Okura River Road and Vaughans Road and the Okura River Road/Vaughans Road intersection would be the same irrespective of the number of households.[277]

[481] Mr Peake said that while Auckland Transport had already started to identify the infrastructure required for identified growth areas in the Unitary Plan such as those at Dairy Flat and Silverdale, the mitigation measures which would be required for Okura were not included as Okura had not been identified as a growth area in the Plan.[278]

*Funding of Mitigation Measures*

[482] The Okura roading and intersection mitigation measures for a 1,000 household development at Okura were estimated by Mr Peake to cost about $34m plus land purchase.[279] Even though a 1,300 household development had been modelled and shown to be within the capacity of an upgraded network, it was not to us clear whether Mr Peake's 1,000 household cost estimate would also apply to a 1,300 household development (or some higher number bearing in mind that the FUZ land would also be serviced from Vaughans Road).

[483] Mr Clark said that all of the mitigation costs could not be attributed solely to the OHL development but would be shared with the Long Bay development and

277 Peake EIC at 13.6.
278 NOE at page 133.
279 Peake Rebuttal at [24].

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Auckland Transport. Depending on the outcome of negotiations between the developers and Auckland Transport, his assessment was that the OHL share could be in the range from $6.8m to $26.7m.[280]

[484] On the premise that the OHL land was rezoned, Mr Peake was asked how the issues of design detail and funding for the road upgrades might be resolved. He replied that there were a number of potential funding mechanisms for this such as a Special Purpose Vehicle Fund and the Land Residential Growth Fund. He added that final design details and funding would normally be resolved at the time of subdivision and before resource consents were granted.

[485] Mr Peake said where rezoning was at play such as at Okura, he did not know how the timing and allocation of funding for the necessary external infrastructure would normally be resolved between the parties.[281]

[486] Suffice to say that the Court was left without a clear understanding of how the murky pond of cost sharing for road upgrading occasioned by new development is determined as between Council, Auckland Transport and developers or the timing of such. Mr Peake identified a number of mechanisms. Inter-party negotiations were mentioned in evidence and the Court is aware of other statutory methods. We note Mr Peake's evidence that failing other means the matter is dealt with via conditions of subdivision consent but expect this is not necessarily a complete answer if matching public funding is unbudgeted.

*Public Transport*

[487] Mr Clark and Mr Peake both referred to a new Auckland Transport bus network which they said was due to be rolled out in the middle of 2018. This included a route which extends initially into the incipient Long Bay village centre and later, as development proceeds, to Vaughans Road. How this route might service an OHL development was an unknown although Mr Clark agreed that the Okura road network needed to be designed to accommodate buses.[282] We apprehend that the proposed collector road shown on Precinct Plan 2 could serve this function satisfactorily.

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280 NOE at page 986.
281 NOE at page 133.
282 NOE at page 987.

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*Precinct Provisions*

[488] The Precinct's I527.8 Assessment-restricted discretionary activities include at I527.8.1 Matters of discretion 1 (b):

> *The provision of an Integrated Transport Assessment for a proposed subdivision that involves land which has a capacity under the Unitary Plan to accommodate more than 30 dwellings.*

and at *I527.8.2 Assessment criteria:*

> *The council will consider the relevant assessment criteria below for restricted discretionary activities, in addition to the assessment criteria specified for the relevant discretionary activities in the overlay, Auckland wide or zone provisions;*
>
> *(1) for subdivision:*
>
> *(b) that involves land which has capacity under the Unitary Plan to accommodate more than 30 additional dwellings the provision of an Integrated Transport Assessment [ITA] that, among other matters, identifies the provision of adequate roading to meet the anticipated demand of traffic from the lots.*

[489] Mr Peake said that there needed to be greater certainty in these Provisions to address not only the detail of the external mitigation measures, but also the Site's internal roading infrastructure as well as buses, bus layovers, cycling and pedestrian routes and the relationship of the OHL development with the adjoining Long Bay village centre and schools. [283,284]

[490] Both traffic witnesses agreed that motivated parties should be able to work together to formulate reasonable planning provisions to address these concerns.[285] Nevertheless we take Mr Peake's point that there is little or nothing in the Precinct Provisions beyond roads to guide related transport decision-making at the consent stage. While some of the matters he raised appear, on their face, relatively straightforward others would benefit from policy direction.

*Findings*

*Issue 1: What mitigation measures would be required for the safe and efficient operation of the surrounding roading network to accommodate the increases in traffic generated by the OHL development?*

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283 Peake Rebuttal at [22].
284 NOE at page 130.
285 NOE at page 990.

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[491] We preface our findings on Issue 1 around a development at Okura of about 1,300 households, the number of households adopted by the expert witnesses in their traffic modelling. As the planning witnesses intimated, this could be achieved if necessary by a Precinct cap on the permitted number of dwellings – although the method obviously has challenges where land to be developed is in multiple ownership.[286]

[492] We accept the advice of the traffic witnesses that it would be necessary to upgrade the Okura River Road and Glenvar Road intersections with East Coast Road as well as Okura River Road and Vaughans Roads and the Okura River Road/Vaughans Road intersection to accommodate an Okura development with as few as 300-500 dwellings. We think it more likely than not that by the time Okura proceeded at least some upgrading of Vaughans Road would have occurred in junction with Long Bay development.

[493] We accept that the final designs for the two East Coast Road intersections would depend on the exact number of Okura households to be developed whereas the designs for the upgrade of Okura River Road and Vaughans Road and the Okura River Road/Vaughans Road intersection would be the same irrespective of the number of households.[287]

[494] Overall, we find that while details of the mitigation measures required for up to about a 1,300 household development can be left for resolution directly between the parties at the time of final design, unresolved is whether the network, even with mitigation measures, would have sufficient capacity to accommodate Mr Mead's upper limit of a 1,900 household development at Okura.

[495] We find it unsatisfactory that Precinct Plan 2 – Roads and related Precinct Provisions do not address in appropriate detail the broader transportation matters referred to by Mr Peake to the point the Court cannot be confident what would result from an Integrated Transport Plan. The Plan's title and wording of 1527.8.2(1)(b) reinforce our unease.

286 Planners' JWS 7/9/2017 Section 2.
287 Peake EIC at [13.6].

*Issue 2: How should transport mitigation measures external to the OHL land be funded and is this material to the Court's function on the current appeals?*

[496] We accept that until such time as there have been detailed negotiations between the developers and Auckland Transport, including as to timing, that endeavouring to decide a cost sharing arrangement for the funding of the external roading and intersection mitigation measures would be purely speculative. This reasoning extends to other transport infrastructure that OHL might have to provide or contribute to.

[497] In any case, we find that suitable mechanisms are potentially available and the resolution of external transport infrastructure funding issues is a matter for resolution between the affected parties and not for us to decide on the current appeals.

*Issue 3: How well do the proposed Precinct Provisions address traffic and transportation?*

[498] Mr Peake in particular identified considerable shortcomings in the Precinct Provisions for traffic and transportation. To repeat, he said that there needed to be greater certainty in the provisions to address not only the detail of the external mitigation measures, but also the site's internal roading infrastructure as well as buses, bus layovers, cycling and pedestrian routes and the relationship of the OHL development with the adjoining Long Bay village centre and schools. [288,289]

[499] We agree with Mr Peake. If we were minded to approve the proposed rezoning, for traffic and transportation at least, this would be conditional on a major rework of the Precinct Provisions to address the type of concerns raised by Mr Peake.

[500] The Precinct Provisions would also need to address the issue of roading network capacity for levels of household developments in excess of the 1,300 household development modelled by the expert traffic witnesses.

*Traffic and Transportation: Assessment against relevant Objectives and Policies*

[501] RPS Urban growth and form Objective B2.2.1(1) is for "A quality compact

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288 Peake Rebuttal at [22].
289 NOE at page 130.

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urban form that enables all of the following" (our emphasis):

(c) better use of existing infrastructure and efficient provision of new infrastructure;

(d) improved and more effective public transport;

[502] These and related objectives are to be implemented by Policy B2.2.2 Development capacity and supply of land for urban development which include:

(2) Ensure the location or any relocation of the Rural Urban Boundary identifies land suitable for urbanisation in locations that:

(c) integrate land use and transport supporting a range of transport modes;

(d) support the efficient provision of infrastructure.

*Comment:* The road network that OHL proposes for the structure plan area can be integrated with the existing road network subject to significant upgrading of the latter. It is also capable of being serviced by an extension of the planned Long Bay bus service. Road upgrading, and most likely the provision of public bus services, will almost certainly require public-sector expenditure. Absent agreement on the timing of any such contribution we cannot be certain that this would be efficient from, say, Auckland Transport's perspective relative to other demands on its resources and network capacity elsewhere. That is not to say OHL could not or would not fund all or part of what would otherwise be the public-sector share. But the Court had no firm evidence of this and is left with its concern about the potential efficiency of a "live zoning" for the public sector.

[503] The RPS also has Policies B3.3.2 for managing transport infrastructure which include:

(4) Ensure that transport infrastructure is designed, located and managed to:

(a) integrate with adjacent land uses, taking into account their current and planned use, intensity, scale, character and amenity; and

(b) provide effective pedestrian and cycle connections.

*Comment:* As noted above, the road and potentially bus service enabled by OHL's structure plan are located, sized and capable of being integrated with the adjoining road network and planned land-use pattern at least up to 1,300 households. We have no certainty beyond that level for the upgraded road network, including as to the FUZ land. While the potential exists for the different OHL development cells to be linked by shared use paths (pedestrians, cycles) there is no express policy support for such. It is disconcerting that the requisite ITA is focused on roads and traffic with only a passing reference to "other matters".

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(5) Improve the integration of land use and transport by:
  (a) ensuring transport infrastructure is planned, funded and staged to integrate with urban growth;
  (b) encouraging land use development and patterns that reduce the rate of growth in demand for private vehicle trips, especially during peak periods.

*Comment:* We earlier recorded our reservations about whether public-sector planning and funding for transport infrastructure is aligned with, or could be efficiently aligned with, the "live zoning" that OHL seeks. We had no evidence that the proposal would contribute positively to implementing Policy (5)(b).

**Economics**

*Background*

[504] In this section of our decision we evaluate the economic implications of undertaking the OHL development in the context of other developments enabled by the Unitary Plan in the wider Auckland region and a permitted development under the existing CLZ zoning of the land at Okura.

*Parties' Positions*

[505] The Council said that the urban development capacity provisions of the Unitary Plan included RPS Policy B2.2.2(1) which anticipated that there would be seven years' projected residential growth at any one time within the RUB. It added that this policy did not refer to seven years' supply being needed in all sub-regional areas. It quoted from Dr Fairgray's evidence that this policy was still achieved under the CLZ option and concluded that there were other options to address capacity that did not involve the environmental issues which exist at Okura.[290] Therefore, live zoning of land in Okura for urban residential purposes was not required to give effect to this policy.

[506] The Council added that even without IHP's estimate of live zoned, feasible enabled residential capacity of 1,200 to 1,900 dwellings in Okura which might be enabled by the OHL (and FUZ) development, there would be a substantial excess of live zoned, feasible enabled residential capacity in other locations in the region over

[290] Council Closing Submission at [13.6].

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the next seven years.[291] Put another way, there was sufficient development capacity to meet the projected demand in other parts of the region, including coastal locations, both within the existing metropolitan area and greenfield areas within the RUB without the need for a contribution from the urbanisation of Okura.[292]

[507] The Council also drew attention to the National Policy Statement on Urban Development Capacity 2016 (NPSUDC) which came into effect on 1 December 2016 after the decisions version of the Unitary Plan had been released. Under this NPS, within the next 3 years, development capacity in the Auckland region must be feasible (meaning that development must be commercially viable, taking into account the current likely costs, revenue and yield of developing[293]), zoned and serviced with development infrastructure. In the medium term (between 3 and 10 years) development capacity must be feasible, zoned and either serviced with development infrastructure or funding for this must have been identified in the Long Term Plan required under the Local Government Act. In the long term (between 10 and 30 years) development capacity must be feasible, identified in relevant plans and strategies and the development infrastructure required to service it must be identified in the relevant Infrastructure Strategy required under the LGA.[294]

[508] The Council also submitted that benefits and costs under s 32 should be approached in the context not only of monetary benefits but also in terms of other values which could be compromised. It quoted from TKC Holdings decision[295] where the Court stated:

> When we look at the question of benefits and costs, it is our view that the costs of ecological, visual, cultural, archaeological and other matters are clearly in favour of a conservative position for development on the Barrier. Although there may be some benefit to land owners from the ability to diversify their land use, long term costs of that are reflected in the introduction of residential development into an area which has previously been production forestry.

[509] The Council said that the evidence of its economic expert witness, Dr Fairgray was consistent with the approach of that Court and should be preferred. It contended that OHL's claimed economic benefits had been overstated because insufficient

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291 Council Legal Submission at [8.46].
292 Council Submission at [8.49].
293 Council Submission at [8.37].
294 Council Submission at [8.37].
295 *TKC Holdings Ltd v Western Bay of Plenty District Council* [2015] NZEnvC 100.

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weight had been given to the benefits of the environmental values that were recognised by the community.[296]

[510] OHL adopted what it said was a standard approach to the economic assessment under which its proposal was compared with the CLZ option. It said that Dr Fairgray (for the Council) had sought to minimise the contribution of the OHL development by expressing it in the context of the 30 year region wide theoretical capacity. It said that this overlooked the fact that the region comprised several sub-regional housing markets and created the impression that the OHL development would make an irrelevant contribution to the Auckland regional housing stock.[297]

*The Issues*

[511] We have identified the following issues for our evaluation and determination:

- *Issue 1: Should the economic evaluation for current purposes take account of the non-market values of the adverse effects of the OHL development on Okura's biophysical environment?*
- *Issue 2: What are the likely economic outcomes (the relative efficiency in resource allocation terms) of the OHL development compared with a permitted development under the existing CLZ zoning?*
- *Issue 3: What is the likely net economic outcome of the OHL development in comparison with residential development at other regional locations already provided for in the Unitary Plan?*

*The Expert Witnesses*

[512] Evidence on economics was provided by:

- Dr D Fairgray (for the Council);
- Mr F Colegrave (for OHL).

[513] Dr Fairgray's evidence-in-chief was some 40 pages long and his rebuttal evidence 25 pages. It would have assisted us if he could have been more succinct. For comparison, Mr Colegrave's evidence was 10 pages long.

*Evaluative Approaches*

[514] The Expert Witnesses participated in two joint witness conferences.[298] At the second conference they recorded the fundamental difference between them as being:

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296 Council Legal Submission at [17.10-17.11].
297 OHL Submission at [16.4], [16.5].
298 Joint Witness Conferences held on 3 July 2017 and 23 August 2017.

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*Dr Fairgray*

*To be consistent with the RMA, the proposal should be examined in terms of the net outcomes, taking into account that equivalent housing capacity is likely to be developed elsewhere in Auckland within the same timeframe, more or less, if Okura is not urbanised. Net outcomes means the overall outcome for Auckland if urbanisation does not occur at Okura, but taking into account consequent development in other locations.*

*Mr Colegrave*

*The effects of the proposal should be compared with what would happen on the land otherwise (under the CLZ zoning). Assumptions should not be made about developments that might occur absent the Okura proposal.*

*Issue 1: Should the economic evaluation take account of the non-market values of the adverse effects of the proposed development on Okura's biophysical environment?*

[515] It was Dr Fairgray's evidence that the economic evaluation should take account of the non-market values arising from the adverse effects of the proposed development on the biophysical environment. He saw a direct link between positive and adverse effects of the proposed development, with the positive effects being those on the economic, social and cultural well-being of people and communities and the adverse effects being those on the biophysical environment.[299] Put another way, the key benefit of urbanising the Okura land relative to the status quo would be the additional housing it would provide while the costs would be the adverse environmental effects of the development identified by other expert witnesses on landscapes, natural character, avifauna, freshwater and marine ecology.[300] If Okura was not developed, Dr Fairgray said that this would be an opportunity cost as there would be less housing for Auckland. Conversely, there would be a benefit through the avoidance of the adverse effects on the biophysical environment[301] (although we note that as these cannot be monetised, there was no basis for quantitative comparison).

[516] In terms of assessing the non-market values arising from adverse effects on the environment, Dr Fairgray said that he had relied on the evidence of expert

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299 Fairgray EIC at [4.19].
300 Fairgray EIC at [4.7] [4.8].
301 Fairgray EIC at [4.39].

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witnesses called by the Council which he summarised as being:[302]

- From Dr Thrush - that a precautionary approach is appropriate for marine ecology;
- From Dr Neale and Dr Lovegrove - that the CLZ development would result in superior outcomes than the OHL development for both freshwater ecology and avifauna;
- From Ms MJ Absolum (the Council's landscape witness) - that the OHL development would create adverse landscape effects;
- From Mr Barwell (the Council's open space witness) - that while aspects of the proposed open space provisions for the OHL development would provide additional benefits, he could not support this nor recommend it for acquisition.

[517] By way of comment, we note that Dr Fairgray did not take into account any of the related evidence from the expert witnesses called by the other parties.

[518] Mr Colegrave disagreed with Dr Fairgray. His approach was that, at a macro level, it might well be appropriate to include the adverse effects on the environment within economic evaluations. Conversely, for specific developments such as at Okura, where assessments of the biophysical effects had been addressed in detail by the relevant topic expert witnesses, consideration of these effects should be excluded from the economic evaluation. Instead, for such developments it should be left to the planners to synthesise the findings of the economic evaluation (excluding non-market costs) with the findings of the other expert witnesses.[303]

*Discussion and Finding on Issue 1*

[519] In terms of benefits and costs, we find that the non-market costs of the effects of the OHL development on the biophysical environment at Okura (including landscapes, avifauna, freshwater and marine ecology) should be taken into account in the overall economic evaluation of the proposed development. This approach is consistent with the findings of the Court in the *TKC Holdings* case referred to in the Council's opening legal submissions.

[520] Having said that, we find that relying solely on the evidence of the expert

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302 Fairgray EIC at [6.1-6.12].
303 NOE at page 1004.

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witnesses for the Council as Dr Fairgray has done results in a quite narrow and incomplete assessment of these non-market costs.

*Issue 2: What are the likely economic outcomes (the relative efficiency in resource allocation terms) of the proposed OHL development compared with a permitted development under the existing CLZ zoning).*

[521] Estimates of the number of dwellings which could be accommodated in the OHL development were between 750 – 1000 (Ms Simons) up to 1480 (Mr Mead) and with the inclusion of the proposed FUZ land up to 1,903 (Mr Mead).

[522] For comparison, as a permitted activity under the existing CLZ zoning the estimated number of dwellings would be approximately 39 inclusive of FUZ land.

[523] The expert witnesses agreed that these estimates provide an appropriate range for their assessments.[304]

*Discussion and Finding on Issue 2*

[524] The minimum estimated dwelling yield of the proposed OHL development would be over 30 times that of the CLZ development as a permitted activity. In strict monetised economic terms, putting to one side any non-monetised adverse effects of the proposed development, the OHL development would be a much more efficient use of the Okura land.

[525] Such a qualified comparison would however, be inconsistent with our findings on Issue 1.

*Issue 3: What is the likely net economic outcome of the OHL development in comparison with residential development at other regional locations already provided for in the Unitary Plan?*

[526] Auckland region's feasible capacity was estimated by the IHP to be in the order of 422,000 new dwellings by 2043 from a combination of existing urban areas, live zoned land in new urban areas, rural zones and future urban zonings (unlikely to be available in next 7 years).[305]

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304 Economists' Joint Witness Statement 3 July 2017 at [2].
305 Council Opening Submissions at [8.44].

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[527] The estimated number of dwellings for the OHL and FUZ developments (750 OHL alone-1,903 both) would be in the range of 0.18% to 0.45% of this IHP estimate.

[528] Dr Fairgray pointed out that the proposed 75ha of the OHL land zoned for residential development would constitute only 0.6% of the future urban zoned areas in the Auckland region.[306],[307] He also considered that the IHP feasibility capacity was conservative and that various forms of development could result in higher capacity, for example through second dwelling conversions, minor dwelling units, non-complying developments, the amalgamation of sites and future plan changes.[308]

[529] Mr Colegrave disagreed. He identified a range of market forces which he said would reduce the IHP capacity estimate including the timing of the supply of land; the availability and timing of the construction of infrastructure to service development land; owners being unaware of the development potential of their land and how to go about development; and owners choosing to keep land (landbank) rather than developing or selling it. [309]

[530] No estimates were provided by either expert witness of the potential impacts of their identified positive and negative factors on the quantum and rate of supply for the IHP estimate.

[531] Mr Colegrave also disagreed with Dr Fairgray's approach for evaluating the proposed OHL development within the framework of the wider Auckland Region. This was on the basis that it was difficult to assess with any reliability the relative costs and benefits of the OHL proposal on urban form outcomes, development efficiency and efficiency outcomes because such effects were highly complex and location specific. Tangible alternative locations needed to be identified and considered and Dr Fairgray had not done this.[310]

[532] If it was to proceed, the OHL development could take around 8-12 years to

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306 Fairgray Rebuttal at [4.71].
307 In addition, we note from Mr Mead's evidence that an estimated 20 ha of FUZ at Okura could contribute another 423 dwellings.
308 Colegrave EIC at [5.8].
309 NOE at page 1002.
310 Joint Witness Statement 3 July 2017 at [5].

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reach full or close to full capacity. Dr Fairgray assumed for the purposes of his evaluation, a start would be made in 2018. He said that while the IHP estimates for the Auckland region do not include indications of timing, he considered that much of the identified capacity could be available at about the same time as the OHL development. For example, as at 2016, the identified IHP capacity per decade included around 146,000 dwellings in residential zones, 85,000 dwellings in business zones, 13,000-14,000 Housing New Zealand dwellings and a similar number of dwellings in rural zones.[311] In total, the development-ready capacity was in the order of 310,000-330,00 dwellings over the same time frame as the proposed OHL development.[312]

[533] The price of the average dwelling in the Okura development was estimated to be about $1.5m which would be in the top 10% of residential property values for Auckland.[313] Dr Fairgray was confident that if Okura was not urbanised, from a timing perspective, the non-availability of Okura dwellings would be more than offset by the availability of new dwellings in the same price range in other locations throughout Auckland.[314] Also, because the OHL development would contribute such a small share of the total capacity, his opinion was that non-urbanisation at Okura would have a negligible impact on dwelling prices elsewhere.[315]

*Discussion and Findings on Issue 3*

[534] Dr Fairgray assessed that the wider Auckland region development-ready capacity would be in the order of 310,000-330,00 dwellings over the same time frame as the proposed OHL development. Mr Colegrave's view was that rather than comparing the estimated number of dwellings for the OHL development with this number, the comparison should be restricted to tangible alternatives only.

[535] Dr Fairgray's estimate of 310,000- 330,000 dwellings was over 160 times the upper estimate of the number of dwellings for the combined OHL and FUZ developments. In addition, the proposed residential development area of the OHL land was less than 0.5% of the existing future urban zoned land in the region. We find that an analysis against strictly comparative sites at the level of detail suggested

311 Fairgray EIC at [5.11].
312 Fairgray EIC at [5.13].
313 Colegrave EIC at [5.20].
314 Colegrave EIC at [5.13].
315 Colegrave EIC at [5.46].

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by Mr Colegrave would add little to our overall evaluation.

[536] From a pricing perspective, we are uncertain about Dr Fairgray's evidence that if the OHL development did not proceed, the non-availability of Okura dwellings would be more than offset by the availability of new dwellings in the same price range at other locations in the region. We think it probable as submitted that Auckland comprises a number of sub-regional markets. Having said that, because the OHL development would contribute such a small share of the total IHP feasible capacity, we find that non-urbanisation at Okura would have a negligible impact on dwelling prices across the region as a whole.

*Overall Findings on Economics*

[537] Our overall findings on the economic evidence can be summarised as follows:

- The non-market costs of the effects of the OHL development on the biophysical environment at Okura (including landscapes, avifauna, freshwater and marine ecology) should be taken into account in the overall evaluation of the proposed development;
- The OHL development would be a more efficient use of the Okura land in monetised economic terms than a permitted development under the current CLZ zoning;
- The economic benefits of extending the RUB to accommodate the proposed OHL (and the FUZ) developments would be minimal in comparison with the economic benefits achievable from developments already provided for in the Unitary Plan.

*Economics: Assessment against relevant Objectives and Policies*

[538] We make the following findings with respect to our third determination above in our Overall Findings on Economics, namely:

- The OHL and FUZ land are not required to be included within the RUB to secure RPS Objective Urban growth and form Objective B2.2.1(3) that there be:

  "Sufficient development capacity and land supply.... provided to accommodate residential, commercial, industrial growth and social facilities to support growth";
- More specifically, it is unnecessary to include the OHL and FUZ land within the RUB to meet RPS Policy B2.2.2(1) Development capacity and supply of land for urban development, which is to:

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Include sufficient land within the Rural Urban Boundary that is appropriately zoned to accommodate at any one time a minimum of seven years' projected growth in terms of residential, commercial and industrial demand and corresponding requirements for social facilities, after allowing for any constraints on subdivision, use and development of land.

- We comprehend that in these circumstances non-inclusion of the OHL and FUZ land within the RUB would not cause the Unitary Plan to be in conflict with the NPSUDC.

**Natural Character and Landscapes**

[539] In this section of our decision we discuss the effects of extending the RUB (and the resultant development which will follow) on the natural character/landscape values of the OHL land and its surrounding environment. We are aware that the concept of natural character extends beyond purely landscape issues and we have separately addressed the aquatic, marine and biological effects of the OHL proposal.

*The Issues*

[540] Having first discussed a number of preliminary matters and described the Okura environment, we will then consider natural character and landscapes under the following issues/headings:

- *Issue 1 - Effects of the OHL proposal on the OHL land;*
- *Issue 2 - Effects of the OHL proposal on the wider environment;*
- *Issues 1 and 2: Initial conclusions*
- *Issue 3 – Effects comparison with CLZ development;*
- *Issue 3: Initial conclusions*
- *Issue 4 – Adequacy of compensation/mitigation measures;*
- *Conclusions as to effects of the OHL proposal on natural character and landscape values.*

In each case, the various issues which we have identified involve consideration of a number of sub-issues.

*The Parties Positions*

[541] We do not set these out in detail here as they will be discussed in depth as we go through the various issues we have identified. We observe on a general basis however, that there was a considerable divergence of opinion between the expert

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witnesses as to the visual impact of the proposed OHL development and as to the assessment of the effects which it might have, not just on the OHL land but on the surrounding environment. We note the recognition contained in paras 4.6 - 4.8 of the SP Report which we cited in para [12](above) as to the protection extended to various identified areas under the Unitary Plan and the extent to which these protections informed and constrained development opportunites on the Site. These were significant factors in the approach of the witnesses and how we evaluated their evidence.

*The Witnesses*

[542] We heard from three expert witnesses on landscape architecture. They were:

- Ms MJ Absolum (for the Council);
- Ms RV de Lambert (for OHL);
- Ms BM Gilbert (for the Society).

These witnesses participated in witness conferencing as a result of which two Joint Witness Statements were filed (dated 31 May and 29 August 2017). We were also materially assisted by the witnesses collaborating to produce a Photographic Viewpoint Combined Bundle (30 August 2017).

[543] The following lay witnesses also gave evidence pertaining to this topic (all of them for the Society):

- Ms K Allen and Mr J McCarthy;
- Ms PA Baskett;
- Ms EC Bettany;
- Ms AE Dickensen;
- Ms DK Gatward;
- Mr A Mount;
- Mr G and Ms L Reid;
- Mr BG Stanley;
- Mr PDG Townend.

*Preliminary Matters*

[544] Five matters fall under the Preliminary Matters heading. They are:

- *Number of dwellings and relevance to natural character and landscape*

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*considerations;*

- *Previous decisions of the Court;*
- *Landscape methodology;*
- *Factors to be considered in landscape assessments;*
- *The comparative assessment issue.*

*Number of dwellings and relevance to natural character and landscape considerations*

[545] This matter arises out of the second landscape JWS (29.08.17) and relates to the disagreement between the parties as to the number of dwelling houses which might be constructed on the OHL land. The expert landscape witnesses addressed this issue in the following terms:

> **Issue 4: Number of Dwellings**
> MA, RdL and BG consider that the location and extent of the urban footprint rather than the density per se will be the principle [sic] influence on the resulting natural and landscape character of the site.

[546] We accept the landscape witnesses' advice on that topic in terms of the effects of the OHL proposal on natural character and landscape values. We note that the Society's submissions were predicated on the basis that there could be one thousand or more dwellings established on the OHL land.[316] In his submissions for the Society, Mr Williams contended that development pursuant to the OHL proposal would involve some 200,000 $m^2$ of built development and 800,000$m^2$ of earthworks in spatial terms. We did not understand those calculations to be challenged, although we appreciate that they are *broad-brush*. Whatever view of the development potential of the OHL land one takes, the proposal undoubtedly urbanises the existing pastoral environment.

[547] In addition to the construction of a large number of dwellings, the OHL proposal involves very extensive engineering works and land contouring. Somewhere in the order of 1.3 million $m^3$ of earthworks will reshape the natural contours of the land and convert it from a pastoral landscape to an urban one. About 2.7 km of streams will be realigned or enhanced and about 1.5 km of intermittent or ephemeral streams reclaimed. Obviously, those changes need to be looked at in the context that the current pastoral environment represents a substantial reduction in natural

[316] E.g. Society's submission, paras 10, 27 and 28.

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character of the land from its original natural state. Nevertheless, the existing pastoral qualities of the land retain a strong natural element and the values associated with them will be extinguished from those parts of the OHL land where urban development is to occur.

*Previous decisions of the Court*

[548] The second preliminary matter arises from three previous decisions of the Court which are relevant to our considerations in this case. They are:

- *North Shore City Council v Auckland Regional Council* [1997] NZRMA 59 (NZEnvC) (the 1996 Decision);
- *Keep Okura Green Society Inc v North Shore City Council* Decision A 95/2003 (the 2003 Decision);
- *Long Bay – Okura Great Park Society Inc v North Shore City Council* Decision A078/2008 (the Long Bay Decision).

[549] The 1996 Decision considered the issue of the definition of the line of Metropolitan Urban Limits (MUL) to be contained in the proposed Auckland Regional Policy Statement in the locality of Okura and Long Bay. The MUL in the (then) Regional Policy Statement is the equivalent of what is now the RUB in the Unitary Plan. The 1996 Decision considered a wider area than that before the Court in this case. It involved an area somewhere in the order of 700 hectares (then in the North Shore City) in both the Okura and Long Bay catchments. The Court concluded that the MUL should be defined so as to exclude land in the Okura catchment. The Court held that the appropriate line for the MUL was the watershed or boundary between the two catchments, following Vaughans Road. As we understand it, the position of the RUB, as now proposed by the Council, is generally the same as the line of the MUL identified by the Court in the 1996 Decision.

[550] A number of findings made by the Court in the 1996 Decision are relevant to our current proceedings. They include the following:

- The importance of that question[317] was enhanced by the fact that those waters, and especially the Okura Estuary, are the last on the east coast of North Shore City which remain unaffected by urban development and largely retain their natural quality; by the fact that they are included in a marine reserve; and by the contents of planning instruments recognising their quality and seeking to protect

317 Urbanisation (inter alia) of the land subject to this appeal.

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them;[318]

- The landscape assessment, and the planning instruments, place high values on the landscape of the margins of the Okura River and the Estuary. We accept that the landscape values in the Okura catchment are worthy of protection. We find that any urbanisation of the Okura catchment would bring about a fundamental change to the landscape character;
- We find it reasonably foreseeable that future generations of Aucklanders will need accessible experience of an estuary in natural condition. The Okura Estuary is the last of its kind on the East Coast of the North Shore, which retains that condition. Urbanisation in the Okura catchment would not sustain the potential of the Okura Estuary to meet that need;
- Yet the Okura Estuary possesses such high natural values, and urbanisation would necessarily have such serious adverse effects on them, that in our judgment urbanisation of land in its catchment would not be sustainable management of natural and physical resources as defined. We therefore hold that to achieve the defined purpose of the Act, it is necessary for the Metropolitan Urban Limits to be defined so as to exclude the land in the Okura catchment;
- In summary, we find that the landscape quality of the Okura Estuary and its margins are so high, and the likely visual effects on the environment of urbanisation of the part of the subject land within its visual catchment are such as to indicate that in those respects it should not be urbanised.

A number of these observations remain pertinent and accurate today, notwithstanding the incorporation of the North Shore City Council into the Auckland Council.

[551] The 2003 Decision involved an assessment as to the extent to which subdivision and associated development should be provided for within the Okura catchment. Insofar as the area subject to our consideration is concerned, the Court found that the minimum size of any new subdivided lot should be 4 ha as that level of subdivision was "consonant with the Special Nature and Character of the Area".[319] In establishing the 4 ha minimum, the Court recorded:

> ... Moreover, in endeavouring to avoid any notion of a mere stepping stone to urbanisation, the anticipated pattern of change under the endorsed framework of control must be one that will present an obvious and continuing contrast to the pattern of development at Long Bay, and the comparative intensity of land use generally

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318 This statement applied to both the Okura and Long Bay catchments. The Long Bay catchment is now in the course of urbanisation.

319 [2003] Decision at [67].

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within the Metropolitan Limits.

Accordingly, in 2003, the Court saw the need for the OHL land to be developed in such a way that it would provide a clear contrast to the Long Bay catchment where urban development was to proceed.

[552] Relevantly, for the purposes of this decision, the Court stated:

> As a starting point, we agree with the submission, variously put by one or more counsel, and in evidence of different witnesses, that in a regional context the Okura Estuary is unquestionably significant for present and future inhabitants of wider Auckland – a factor recognised in the identification of the metropolitan limit in the earlier litigation.

[553] The Long Bay decision is of relevance to our considerations, not because of any findings which were made as to the character of the area subject to that appeal (which lies beyond the Okura catchment) but rather for the emphasis which the Court placed in its initial decision and in two subsequent decisions, on providing screening between the urban development which was to take place in the Long Bay catchment and the adjoining Regional Park. The Court went to considerable lengths to ensure that urban development at Long Bay did not intrude into otherwise natural park views. A similar issue arises in this case, primarily on the north-eastern corner of the OHL land, which adjoins the Regional Park and where a Mixed Housing Suburban Zone is to be established under the OHL proposal, but also in a wider context of views from the Regional Park over the OHL land.

[554] Although OHL contended that Auckland's development circumstances have changed since the issue of the earlier decisions (and we accept that must be so in a general sense), none of the evidence we heard in these proceedings challenged the findings in the 1996 and 2003 Decisions as to the high natural values of the Estuary, that it was the last estuary on the east coast of the (former) North Shore City unaffected by urban development which retained its natural character and its significance in a regional context. It seems to us that those circumstances have not changed at all but we will make our own findings on these matters rather than simply relying on the findings of the earlier decisions.

[555] Notwithstanding the Courts' earlier findings that the Estuary required protection and that urbanisation would "necessarily" have serious adverse effects on its natural values, it was OHL's case that its proposed development could be accommodated in this environment. We will address that issue in due course.

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Subject to our conclusions on that issue, we consider that there is considerable merit to the Council's submission that:

> Since the 1996 and 2003 decisions, the population pressures in the region have increased and will continue to do so. The Council submission is that it will be progressively more important for places with special environmental values to be protected and for Aucklanders to have an accessible experience of an estuary in a natural condition.[320]

It seems to us that if anything, the increased pressure for residential development in Auckland generally and the extent of urbanisation in the Long Bay catchment heighten the sensitivities identified in the 1996 and 2003 decisions.

*Landscape methodology*

[556] The third preliminary issue is the methodology used by the expert landscape architecture witnesses to undertake their assessment of the effects of the OHL proposal on the Okura environment. The witnesses' JWS recorded that they had adopted an Effects Rating Scale attached (Appendix 1) to the evidence of Ms de Lambert.[321] The scale provided as follows:

> Appendix 1: Effects Ratings and Definitions

[320] Council Opening Submission at [7.21].
[321] We understood that this scale was also Appendix 1 to the BML Report which provided the OHL assessment of landscape effects.

| Effects Rating | Use and Definition |
|---|---|
| Negligible | Use<br>The development/activity would:<br>Have a negligible effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or Have a negligible effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*Negligible: adjective- 1. so small or insignificant as not to be worth considering.* |
| Very Low | Use<br>The development/activity would:<br>Have a very low effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or Have a very low effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*Very: adverb - 1. In a high degree. 2. With superlative or own without qualification: the very best quality.*<br>*Low: adjective- 1. Below average in amount, extent, or intensity. 2. Lacking importance, prestige, or quality; inferior.* |
| Low | Use<br>The development/activity would:<br>Have low level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or Have low level of effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*Low: adjective- 1. Below average in amount, extent, or intensity. 2. Lacking importance, prestige, or quality; inferior.* |
| Moderate | Use<br>The development/activity would:<br>Have a moderate level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or Have a moderate level of effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*Moderate: adjective- average in amount, intensity, or degree* |
| High | Use<br>The development/activity would:<br>Have a high level of effect on the character or key attributes of the receiving environment and/or the visual context within which it is seen; and/or Have a high level of effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*High: adjective- 1. Extending above the normal level. 2. Great in amount, value, size, or intensity. 3. Great in rank or status.* |
| Very High | Use<br>The development/activity would:<br>Significantly change the characteristics or key attributes of the receiving environment and /or the visual context within which it is seen; and/or Have a significant effect on the perceived amenity derived from it.<br>*Oxford English Dictionary Definition*<br>*Very: adverb - 1. In a high degree. 2. With superlative or own without qualification: the very best quality.*<br>*High: adjective- 1. Extending above the normal level. 2. Great in amount, value, size, or intensity. 3. Great in rank or status.* |

[557] Although the landscape witnesses all used the scale as a reference point they came to different conclusions as to just where on the scale the OHL proposal fitted in terms of its effects. We were surprised at a contention advanced by Ms de Lambert in the course of cross-examination that the classification of an adverse effect as moderate (as she had done on a number of occasions) could mean that the effect was minor.[322] Even appreciating that the scale is a Boffa Miskell scale which they can interpret as they see fit, we had some difficulty with the proposition that the term moderate equated to minor, particularly when regard is had to the definition of

[322] NOE pages 574 and 575.

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moderate contained in the scale that the word means "Average in amount, intensity, or degree". The word "minor" is one which has some significance in RMA proceedings, particularly in light of the provisions of s 104D(1)(a) RMA. We understand the word to mean lesser or comparatively small in size or significance.[323] We consider that conflation of the two words would be contrary to the understanding of many persons as to their meaning and certainly contrary to our understanding. In any event, we will consider the degree of adverse effect in light of the evidence which we heard.

*Factors to be considered in landscape assessments*

[558] The fourth preliminary issue also arose out of the expert witnesses' assessments of effects. That relates to disagreement between them as to the range of factors which ought be taken into account in their assessment. Ms de Lambert based her assessment of effects of the OHL proposal on ONL Areas 51 and 54, having regard to the following factors contained in Schedule 7 of the Unitary Plan, namely natural science factors (geological and topographical, ecological, dynamic), aesthetic values (memorability and naturalness), expressiveness and transient values.

[559] These were some of the factors identified in the Environment Court decision *Wakatipu Environmental Society Inc v Queenstown Lakes District Council*[324] known as the WESI factors. The Society contended that Ms de Lambert had not had regard to other relevant WESI factor of "shared and recognised values" which is not referred to in Schedule 7.

[560] We understand that the concept of shared and recognised values relates to community perceptions and appreciation of a landscape and the values which the community places on that landscape (sometimes called associative values). Policy 15(c)(vii) NZCPS provides that whether values are shared and recognised is a factor to be taken into account in assessing natural landscapes. Policy B4.2.2(1)(f) of the Unitary Plan (RPS component) identifies "shared and recognised values: including the public profile and recognition of particular landscapes" as being a factor to be taken into account in identifying, evaluating and protecting outstanding natural landscapes.

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323 *Bethwaite v Christchurch City Council* Decision C085/93.
324 *Wakatipu Environmental Society Inc v Queenstown Lakes District Council* [2000] NZRMA 59.

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[561] We think that the criticism was somewhat harsh on Ms de Lambert, who recognised for example that the Estuary "is a highly valued landscape, and features a number of sensitive features and areas".[325] Section 4 of Ms de Lambert's evidence-in-chief was a summary of the visual catchment of Okura identifying viewing areas and the persons who would comprise a viewing audience. Although Ms de Lambert did not address the shared and recognised values topic under that head specifically, she certainly addressed the perceptual natural character attributes of the Estuary and how people might perceive changes to it. On the other hand we think that her failure to address the shared and recognised values as a discrete topic led to her *underweighting* the adverse effects which loss of natural character of the OHL land would have on the perceptions and appreciation of those people who visit and enjoy it. We will return to that matter in due course.

*The comparative assessment issues*

[562] The final preliminary matter is the basis on which the landscape witnesses each undertook a comparative assessment of the effects of the OHL proposal on the Okura environment as against the effects of development in accordance with the current CLZ zoning, which would presently allow the erection of 29 houses on the OHL land. A substantial plank of OHL's case was the contention that its proposal with a detailed structure plan and proposals for environmental enhancement of coastal and riparian areas was a more appropriate development of the land than the currently permitted development under CLZ zoning. OHL contended that the CLZ zoning would lead to the construction of 29 mansion type dwellings in a *millionaires' paradise* from which the public would be excluded.

[563] Mr Williams noted the emphasis which OHL put on a comparison between the effects of its proposal and development which would be permitted under the CLZ zoning. He contended that:

> Regardless of whatever impacts the RCS-L option might have, it is the effects of the appellant's option and only those effects that are at issue in terms of whether that option would give effect to the statutory imperatives of the higher order planning instruments cited earlier in these submissions.[326]

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325 de Lambert EIC at [2.3].
326 Society Legal Submission at para 177.

However, he went on to acknowledge that a "broad level comparative assessment" could be made for s 32 purposes.[327] He contended that OHL was trying to apply the CLZ option as a form of permitted baseline.

[564] OHL submitted as follows (note that counsel and witnesses sometimes used CSL to refer to the Countryside Living Zone):

> 5.25 OHL's position is that the mandatory requirements for plan preparation include:
>
> (a) Evaluating whether the CSL zoning or OHL's proposed zoning and the Okura Precinct objectives may be the most appropriate way to achieve the purpose of the Act (section 32(1)(a) of the RMA); and
>
> (b) Having regard to the actual and potential effects of activities on the environment (sections 68(3) and 76(3) of the RMA), including the future environment.[328]
>
> 5.26 The words "most appropriate" in section 32(1)(a) indicate a comparative analysis of the potentially available options is required, and that OHL's proposal cannot be considered in a vacuum. Mr Williams accepts that it is appropriate for OHL's experts to have undertaken a broad-level comparative assessment of the OHL and CSL proposals for this purpose, as they have done.[329]

[565] OHL also contended that consideration of the CLZ counterfactual was part of a "real world" assessment of what the future environment would be. OHL's position was "that the CSL option provides the relevant counterfactual against which its proposal must be compared, in order to determine which is the better or most appropriate planning outcome".

[566] We concur with OHL's contention that a real-world assessment must be applied. We do not consider that assessment of the CLZ option is a matter of predicting the future environment because the OHL and CLZ options are mutually exclusive. If either one of them is established, the other will not exist. We agree that comparison of the OHL and CLZ options arises pursuant to s 32(1)(a) and also (in our view) pursuant to s 32(1)(b)(i) which relevantly provides[330]:

> **32 requirements for preparing and publishing evaluation reports**
>
> (1) An evaluation report required under this Act must –
>
> (a) examine the extent to which the objectives of the proposal being evaluated are

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327 Society Submissions at para 178.
328 Council Opening Submission at [6.2]-[6.3].
329 Society Submission at [178].
330 This version of s 32 came into force as from 4 September 2013 for the purposes of preparation of the Unitary Plan.

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> the most appropriate way to achieve the purpose of this Act; and
> (b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by –
> (i) identifying other reasonably practicable options for achieving the objectives;

The CLZ option is not only a reasonably practicable option for achieving the objectives of the OHL proposal (which we understand to be, inter alia, the enablement of residential development on the OHL land) but is the development option permitted by the current zoning of the land. It is one which all parties appeared to accept might reasonably be expected to happen in the event that the land is not brought into the RUB but retains its present zoning. In other words, it is the applicable status quo in the event that the OHL appeal does not succeed. To the extent that the comparison involves a comparison with effects that are permitted by a plan, it has some similarity to a permitted baseline comparison under s 104(2) RMA but, in our view, arises in this case under the provisions of s 32 to which we have referred. Accordingly we will identify and assess the effects on the natural character and landscape values of the Okura environment which will be brought about by approval of the OHL proposal on the basis of the current state of that environment. We will subsequently undertake a comparison of those effects with the effects of the CLZ option to assess the extent to which of the options before us is the most appropriate way to achieve the objectives of the Unitary Plan.

*The Okura Environment*

[567] We have previously (para [12]) given a general description of the environment in and around the OHL land. We now undertake a more detailed consideration by reference to a number of documents attached to the evidence of the Council's planner, Mr Mead.

[568] The first is his DM02, showing the catchment boundary for the Okura catchment and the position of the area subject to our discussion. The Estuary sits to the immediate north of the OHL land with Weiti situated on the northern side of the Estuary. To the east is the Long Bay Regional Park (the Regional Park) including an area known as Piripiri Park which adjoins the eastern boundary of the OHL land and to the west, the township of Okura and the Okura river mouth.

[569] The second document is Mr Mead's DM04A, being an Outstanding Natural Landscapes (ONL) Overlay. DM04A shows two ONL Areas, being Area 51 and Area

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54 as identified in the Unitary Plan – Schedule 7.

- ONL 51 incorporates the Estuary itself as well as a number of its adjoining coastal landforms to the north and south. The only part of the OHL land identified as being within ONL 51 is the immediate Estuary frontage of the land including an area of sedimentary cliffs in the north-eastern corner of the land containing approximately 4.72 ha. The detail of DM04 does not enable us to define with any precision the varying depths to which the ONL extends into the OHL land but OHL does not propose to develop any land which might be included in that identification. An extensive area of native forest on the northern side of the Estuary is included in the identification. There are wide views from the Estuary and the land on its northern side into the OHL land which provides a pastoral backdrop to ONL 51;
- ONL 54 adjoins ONL 51 at the headland on the southern side of the Estuary and runs from there south into Long Bay. There are views from parts of ONL54 towards and over the OHL land.

[570] Mr Mead's attachment DM04B was a High Natural Character Overlay in accordance with Schedule 8 of the Unitary Plan. The Overlay identifies two High Natural Character Areas in the immediate vicinity of the OHL property.

- The first is HNC 94, which is an area of land and river on the north side of and extending into the middle of the Estuary. The area is described in these terms in Schedule 8:

  An assemblage of steep coastal escarpments, hills, shell banks and sand spits that form the northern banks of the Okura River. These landforms are largely unmodified and free of development, being extensively vegetated in mature and regenerating native forest. That said, this part of the coastal environment adjoins the exotic plantations of the Weiti Forest whereby the taller forestry species partly crests the inland ridge to the north and dominate the western margins. The deposition landforms of the shell banks and intertidal flats directly engage with the ebb and flow of the Okura River and reveal the tidal influences of the Hauraki Gulf.

- The second identified area is HNC 95, which includes areas of both land and sea from Long Bay north across parts of the Regional Park beyond the southern headland at the Estuary entrance and reaching west almost to the OHL property. The area is described in these terms in Schedule 8:

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> A sequence of rocky shoals, coastal scarps, headlands, sedimentary cliffs, gullies, sandy beaches and pockets of remnant and regenerating coastal forest backed by pastoral farmlands. With very little development within the coastal environment, the open areas of pasture become subservient to the interplay of coastal vegetation, exposed scarps and cliffs, sandy beaches, rocky shelves and the open waters of the Hauraki Gulf. With these landforms traversing the intertidal zone, this section of the coast enjoys a dynamic interaction with the ebb and flow of Hauraki Gulf.

[571] The next relevant overlay is Mr Mead's DM04C a Significant Ecological Areas Overlay. The relevant areas for our considerations are:

- Significant Ecological Area – SEA M1 64a Marine 1;
- SEA M1 64b Marine 1;
- SEA M1, 64W1 Significant bird wading Area.

We have previously set out the SEA descriptions in full in the Marine Benthic Ecology section of this decision. Suffice to say for the purposes of this section of the decision that the SEA recognitions acknowledge a wide range of significant natural values in these Areas.

[572] In addition to the various identifications contained in the Unitary Plan, the Estuary is also part of a Marine Reserve pursuant to the Marine Reserve (Long Bay–Okura) Order 1995. The Marine Reserve covers an area comprising 980 ha including the Estuary.

[573] Further to its recognition as part of an ONL in Schedule 7 and HNC area in Schedule 8, the landward portion of ONL 51 and HNC 94 is a Department of Conservation Reserve (the Okura Bush Scenic Reserve). The Okura Bush Walkway, a popular walking track winds its way through the reserve from Haigh Access Road to Dacre Point with views across the Estuary to the OHL land.

[574] Another feature of the Okura environment is the Regional Park which runs from Long Bay past Piripiri Point to the Estuary's southern headland, extending into the Okura catchment. We were told that the Park is a recreational "hotspot"[331] for Auckland, attracting somewhere in the order of a million visitors a year. We were also told that the Long Bay end of the Regional Park provides facilities for family groups and active recreationalists, whereas the northern end (including those parts of the

[331] NOE at page 1087.

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Park in proximity to the OHL land) provides a coastal countryside setting with a walking track around its perimeter giving panoramic views of the Hauraki Gulf and the Estuary (in part) adjacent to parklike rural farmlands.

[575] The final aspect of the surrounding environment which is relevant for our considerations is the presence on the northern side of the Estuary of the national walkway Te Araroa. The walkway runs approximately north-south along the edge of Karepiro Bay in this vicinity to Dacre Point, which marks the north-eastern extremity of the Estuary. At this point, it is possible to wade across the Estuary at low tide (somewhere between hip and chest height) to its southern shore near the OHL land where the walkway connects to the walking track around the edge of the Regional Park.

[576] It will be apparent from the preceding commentary that the Okura environment is one whose component parts are subject to multiple layers of overlapping recognition and protection. The Estuary itself is identified as an ONL, an HNC area (in part), an SEA and a marine reserve. It will also be apparent that the layers of recognition and protection we have identified do not extend to the OHL land itself, except for ONL 51 which covers nearly all of the immediate coastal margin of the land. However the OHL land clearly lies within the coastal environment whose natural character s6(a) RMA requires us to preserve from inappropriate subdivision, use and development and we will consider that matter in our assessment.

[577] We will consider the natural character and landscape aspects of this decision in two *bites.* Firstly, we will look at effects of inclusion in the RUB and development as proposed by OHL on the OHL land itself. Then we will consider the effects of the OHL proposal on the wider environment beyond the OHL land. That consideration in itself breaks down into two separate parts, firstly effects on the Estuary and secondly effects on the Regional Park.

*Issue 1 - Effects of the OHL proposal on the OHL land*

[578] Ms de Lambert's evidence contained a helpful discussion of the concept of natural character and the distinction between natural character, natural features and landscape and amenity values. She noted that natural character is not defined in RMA nor in NZCPS. She testified "that naturalness exists on a spectrum from pristine to highly modified, and that the level of naturalness found within an area is defined by

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the level of indigenous nature (i.e. natural science factors) as well as perceived nature (i.e. perceptual and experiential components) – and that neither should be given undue weight over the other".[332] She went on to state that "judgements made in relation to the effects on the natural character of the Okura Estuary concern the degree to which the proposal would alter the level of actual and/or perceptual natural character attributes within the coastal environment ... ".[333]

[579] Ms de Lambert assessed the changes to the landscape elements and the effect on the level of actual (biophysical) naturalness within the OHL land which would be brought about by development of the type proposed by OHL. She recognised that the topography of the OHL land was such that extensive earthworks were required to give effect to OHL's proposals and that those earthworks "will impact upon the legibility and cohesiveness of the landscape's existing features, including its contour, limited vegetation cover and stream courses. At the same time, a pattern of gullies and broad ridgelines will be maintained across the site to retain legibility of the underlying topography".[334] She undertook her assessment in the context that the existing landscape elements within the OHL land had been substantially degraded by years of agricultural use and that the stream courses and remaining vegetation on the land are absent of any notable indigenous natural character values and are typical of those found within agricultural land across the region. She stated that "whilst there will be a lasting impact, and **high** effect[335] on the land's overall naturalness value from the modification of its contour, the effects of stream reclamation, can in my opinion be mitigated by the proposal".[336] Ms de Lambert considered that the mitigation proposed by OHL, including enhancement of watercourses together with rehabilitation and enhancement planting with indigenous bush, meant that there would be a significant beneficial effect on the overall level of biophysical naturalness within the OHL land.

[580] Ms Gilbert considered that:[337]

> 116 With respect to the site itself, the spacious and relatively undeveloped character of the OHL land, together with its coherent and relatively unmodified landform pattern, are noteworthy aspects of natural character. The approved CSL development on the OHL land will alter the perception of modification. On balance, in taking into account the approved CSL development, I consider that

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332 de Lambert EIC at [5.17].
333 de Lambert EIC at [5.19].
334 de Lambert EIC at [5.23].
335 We understand this to be high adverse effect].
336 de Lambert EIC at [5.26].
337 de Lambert EIC at 116.

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the site itself currently rates at the lower end of the spectrum for natural character values.

117 The proposed protection of coastal vegetation, restoration of stream corridors, and enhancement plantings (including along the coastal edge) will enhance the natural character values of the site.

118 Conversely, the substantial scale of the proposed earthworks (noting that the majority of the OHL land will be modified as evidence by the Earthworks Plan attached to Ms Absolum's evidence as Figure 11) and the introduction of 1,215 homes will significantly alter the perception of naturalness associated with the site.

[581] In her rebuttal evidence Ms Gilbert addressed the proposition that the high adverse effects on biophysical natural character brought about by changes in topography and stream reclamation were counterbalanced by the stream enhancements and protection of existing vegetation to give a significant positive effect on overall biophysical naturalness, in these terms:[338]

> I acknowledge these benefits (my paragraph 133, i.e. stream and gully plantings, protection of existing vegetation), and defer to the ecologists as to how far stream riparian and enhancements address the effects of stream loss and modification itself. As a landscape expert however, I do not consider these benefits can more than offset the *overall* adverse effects RdL refers to on biophysical natural character, including the 80 hectares of earthworks (i.e. 1.8 million cubic metres cut and fill) to create a significant *overall* positive outcome.[339]

[582] We accept Ms Gilbert's evidence on this topic. Even appreciating that the OHL land in its present pastoral condition does not rate highly on the spectrum of naturalness, it is inevitable that urbanisation will significantly and adversely diminish the remnant natural biophysical character of the land due to the massive scale of earthworks and subsequent residential development which are to be undertaken on it. Hand in hand with that will be an inevitable and significant reduction in the perception of naturalness of the land as compared with its present pastoral condition. We observe that this significant diminution of natural character occurs within the coastal environment. We will return to the issue of whether or not these adverse effects are avoided or adequately mitigated in more detail later in this decision but in reaching the conclusions which we have, we have had regard to the mitigation

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338 Gilbert Rebuttal evidence, page 3.

339 The final figure for volume of earthworks was quoted as being 1.3m cubic metres rather than the 1.8m cubic metres referred to by Ms Gilbert relying on early calculations. Nothing turns on that.

measures which OHL proposes.

*Issue 2 - Effects of the OHL proposal on the wider environment*

[583] We consider that the most significant aspect of the diminution in natural character of the OHL land arises from the relationship of that land to the wider environment and the extent to which development on it might diminish or adversely impact on the natural character and landscape values of that wider environment.

[584] We commence our discussion on that topic by reiterating our earlier observation that the bulk of the OHL land itself is not subject to identification as either an ONL or HNC Area. The northern coastal margins and cliffs of the OHL land are included in ONL 51 but no development is proposed in these areas. The northeastern boundary of the OHL land is very close to HNC Area 95 which includes the Regional Park but none of the OHL land is encompassed in the HNC classification. Accordingly, development on the OHL land would not in itself have any direct physical impact on the identified ONLs and HNC Areas (aside from the coastal margin of ONL 51 which will be subject to enhancement planting). Notwithstanding that fact, it was common ground between the landscape experts that there was a relationship between the OHL land and these other areas and that development on the OHL land had the potential to affect the qualities of the identified areas, particularly insofar as appreciation and perception of them was concerned.

[585] The relationship between the natural pastoral qualities of the OHL land and the nearby ONLs and HNC areas is identified in the Unitary Plan itself:

- Under the Head of *elements, patterns, processes,* Schedule 7 describes ONL 51 in these terms:

  Coastal/estuarine landforms with remnant indigenous vegetation and pattern of pasture reinforcing topography.

- Under the Head of *Memorability,* Schedule 7 records:

  **High**

  Clearly expressed river corridor contained by a sequence of natural elements that is both distinctive and harmonious irrespective of the existing Okura Settlement and adjoining farmland.

- Under the Head of *Expressiveness* Schedule 7 records:

  **High**

  Clearly expressed river corridor supported by adjacent landforms in native forest margins to create a reasonably cohesive whole that contrasts with

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surrounding development, exotic forestry and rural land uses.

- Schedule 7 describes the landscape type and nature of ONL 54 in these terms:

  **Coastal Wild nature (Coastal)**

  Dramatic sequence of sedimentary headlands and cliffs, back by rolling pastoral ridges and basins, interspersed with beaches and stream corridors.

- Schedule 8 describes HNC 95 at Long Bay (which sits adjacent to the eastern boundary of the OHL land) in these terms:

  A sequence of rocky shoals, coastal scarps, headlands, sedimentary cliffs, gullies, sandy beaches and pockets of remnant and generating coastal beach backed by pastoral farmlands. With very little development within the coastal environment, the open areas of pasture become subservient to the interplay of coastal vegetation, exposed scarps and cliffs, sandy beaches, rocky shoals in the open waters of the Hauraki Gulf ...

A number of these descriptions recognize the relationship between the ONL and HNC areas which we have described and their pastoral components/backdrops.

[586] The interrelationship between the OHL site and the surrounding ONL and HNC areas was recognised in both the BML[340] and SP[341] Reports.

[587] Ms de Lambert commented on the probable impact of development of the OHL land in these terms:

> 9.2 Elements of the Okura land, such as the natural contour, will be impacted to a high degree as a result of the proposal. These changes together with the subsequent residential development, will alter the character of the site and have a knock-on impact upon the levels of perceived naturalness across parts of the Okura Estuary and the amenity values of surrounding viewing audiences, particularly within the estuary and its surrounding context. (our emphasis)

She went on to add that:

> Despite this, it is my opinion that the given attributes of the nearby high value landscape areas (e.g. those scheduled as ONL and HNC) can be protected, and remain valid, alongside the development.

[588] Ms Gilbert described ONL 51 (which overlaps with much of HNC 94) and the

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340 E.g. at para 6.5.
341 E.g. at paras 4.6 and 4.7.

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OHL land as being "visually and spatially linked".[342] The Court requested her to expand on the relationship between ONL 51 and the OHL land. She did so in these terms:[343]

> Certainly I will try my best. In relation to the HMC [sic – HNC] and ONL that coincides with the estuary, the waterbody, to my mind those areas are inevitably inextricably whichever linked to the OHL site simply because of the lie of the land and the fact that it's a large proportion of the HMC [sic – HNC] and the ONL Areas are waterbodies. So unlike a land-based scheduled area there is no way of screening or mitigating or effectively buffering from that scheduled area the development on the site. Yes I accept that there will be a coastal reserve and some sort of marginal treatment but the rising topography means that a large proportion of the urban development will be exposed to the HMC [sic – HNC] and ONL Areas, the scheduled areas, and will inevitably influence the character of those areas.
>
> Q: And that can't be avoided, is that your –
>
> A: No, I don't think that can be avoided.
>
> Q: Is that because of the sheer level of intensity that we might get?
>
> A: It's the scale of the development, Sir, but also the spatial relationship so you've got a hillside – perhaps you were, when you went down into Long Bay and I don't know if you went to the Regional Park at all but you're in the low-line portion of Long Bay and you look up and you can see the urban development all around you and that will be the condition on the estuary. Does that assist?

[589] Ms Absolum considered that "the open rolling rural landscape of the OHL land is sensitive to change and urban development within the visual catchment of the ONL will lead to the degradation of its values".[344] She referred to a finding in the 1996 Decision that: "In summary, we find that the landscape quality of the Okura Estuary and its margins is so high, and the likely visual effects on the environment of urbanisation of the part of the subject land within its visual catchment are such as to indicate that in those respects it should not be urbanised".

[590] In short, the potential for development on the OHL land to adversely affect the ONL and HNC Areas in the surrounding environment was recognised by the witnesses and had previously been recognised by the Court. That adverse effect could be brought about by diminution of the quality of the ONL and HNC Areas themselves and by diminution in the experience of those enjoying them due to their

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342 NOE at page 412.
343 NOE at page 449.
344 Absolum EIC at [12.3].

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rural backdrop being replaced by urban development.

[591] Before we consider the effects which development of the OHL land would have on the surrounding environment we address a matter raised in Ms Gilbert's evidence under the Heading "Landscape Values and Sense of Place". In paragraphs 48 - 52 of her Evidence-in-Chief, Ms Gilbert criticised the BML Report of 20 November 2015, which underpins the landscape and natural character aspects of OHL's case, including the evidence of Ms de Lambert who was a reviewer of the Report. In para 48 of her Evidence-in-Chief, Ms Gilbert contended that the BML Report, although having identified the various landscape notations and features in the Okura area "fails to evaluate the way that these various attributes come together to create a distinctive 'sense of place' in this part of the Auckland region".[345]

[592] In her paras 49 - 51, Ms Gilbert identified the various features of Okura which are in play when considering natural character/landscape issues. At the risk of repetition and making this decision unduly long, we now set out in full her evidence regarding these features together with the conclusion which she reaches about their aggregation at Okura (footnotes omitted):

> 49. In my opinion, the site is nested within a landscape setting that displays landscape values that rate at the higher end of the spectrum as a consequence of:
>
> (a) The ***high biophysical, associative and perceptual values*** associated with the estuary, coastal waters and their cliff, bush-clad and pastoral margins, as evidenced in the identification of much of these areas as an ***Outstanding Natural Landscape*** in the AUP:OiP.
>
> (b) The ***high biophysical characteristics and perceptual values*** associated with the central and northern side of the estuary and bush-clad slopes, parts of the coastal waters, the Piripiri Point headland, the eastern coastline of the regional park and the catchments within the regional park dominated by substantial stands of regenerating bush, as evidenced by the identification of these areas to be of ***High Natural Character*** in the AUP:OiP.
>
> (c) The ***high ecological and natural character values*** associated with the *Long Bay-Okura Marine Reserve* throughout the estuary, river and the coastal waters to the north and south, in which all marine life is protected from disturbance or harm. The reserve was established in 1995, totals an area of some 980ha and is identified as a *Marine 1 Significant Ecological Area* (SEA) in the AUP:OiP. As the Department of Conservation (DoC)

[345] Gilbert EIC at [48].

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brochure for the Long Bay-Okura Marine Reserve explains: *"Marine reserves … are the national parks of the marine world".*

(d) The ***high ecological values*** associated with the *Okura Bush Scenic Reserve* on the north side of the estuary and river, administered by DoC and which coincides with a *Terrestrial SEA* identified in the AUP:OiP.

(e) The ***very high recreation and scenic values*** *associated with the Okura Bush Walkway* on the north side of the estuary and river extending between Haigh Access Road and Duck Creek Road and comprising a three-hour return walk through coastal forest via Karepiro Bay and the historic Dacre Cottage. It is my understanding that the use of the walkway has grown from 8,000 walkers per year to 70,000 in the last five years, demonstrating the popularity of the walkway.

(f) The ***very high recreation and scenic values*** associated with the ***Okura Estuary*** itself, which is popular as a location for kayaking and snorkeling where people can experience a relatively 'wilderness' feel despite their proximity to the city. The photographs attached in Appendix B illustrate this landscape experience.

(g) The ***high shared and recognised values*** of the ***Okura Estuary*** and ***Okura Bush Scenic Reserve*** as demonstrated by the wide range of community groups and users that enjoy the area, including: tramping clubs, schools, universities, commercial groups, families, informal groups, tourists (including Te Araroa users), Duke of Edinburgh award programme participants, William Pike Challenge classes, horse riders (low tide) and bird watchers. The photographs attached in Appendix C show such groups using the area. Referencing the evidence of Ms Lezette Reid, Mr Geoff Reid and Mr Townend, the sustained efforts of the local community in managing weeds and pests in the area, organizing tree planting days and coordinating the restoration and ongoing management of Dacre Cottage are testament to the extent to which the area is valued and cherished by the community.

(h) The ***very high recreation, scenic, and shared and recognised values*** associated with the ***Long Bay Regional Park*** that extends from Long Bay northwards to Piripiri Point and rolls over into the Okura catchment at its northern end. The Regional Park runs alongside the Long Bay-Okura Marine Reserve and includes a range of sandy beaches, rock shoals, pohutukawa-clad cliffs, and remnant and regenerating bush slopes and gullies, interspersed with pastoral areas. The park is approximately 30km from the Auckland CBD and some 6km from the nearest motorway off-ramp, with a regular bus service to and from the Auckland CBD, making it one of the most easily accessible Regional Parks in the Auckland Region (and arguably the most easily accessed Regional Park on the east coast of the region).

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In addition to its proximity to the City and accessibility, ample carparking, public barbeque, picnic table, playground, camping, restroom and 'private site' facilities, in combination with the network of well-formed walking and mountain bike tracks, safe water conditions for swimming, snorkeling, kayaking and the like, the historic Vaughan Homestead and museum, and the well-maintained, highly attractive coastal setting, make it highly popular. As the Regional Park brochure explains (refer Appendix D), the quieter and more secluded northern portion of the park adjacent the site offers a chance to 'get away from the crowd'. The Auckland Design Manual showcases the park, describing it as: *"[a] busy seaside park [that] treasures and celebrates its special features for the enjoyment of current and future generations"* and advises that approximately 1.3 million people visit annually *"making it a regionally and nationally significant recreation and tourist destination".* The popularity of the park is borne out by the warning on the Auckland Council website of traffic queues on public holidays and fine weekend days of 1km or more, tailing back to the Torbay shops.

The importance of the Regional Park as a peaceful refuge away from the city is reflected in the Wēiti and Long Bay Precinct provisions. The Wēiti provisions require that the landscape, skyline and coast are protected from development when viewed from the Long Bay Regional Park. At Long Bay, a series of devices have been introduced to ensure that urban development is not visible from the central and northern portion of the park. These include the Ridgeline Height Control and the Park Interface Protection Area (that together seek to limit the visibility of urban development from the Grannys Bay catchment, Piripiri Point and identified Park Interface Viewpoints within the regional park), and the Piripiri Point Protection Area (which restricts development in this area to one dwelling on a nominated platform that is outside of the precinct and encourages a rural style of development). The very long history of community involvement in the protection and long-term management of the Regional Park, together with the design of surrounding urban areas, speaks to the high values placed on this landscape feature by the community.

(i) The ***high creation, scenic and shared and recognised values*** associated with the stretch of ***Te Araroa,*** where it passes across the mouth of the Okura Estuary, linking the Okura Bush Walkway with the Long Bay Regional Park walkway. I am advised that the route across the estuary is only available at low tide and, reasonably frequently, southbound trampers walk westwards along the Okura Bush Walkway to the spit (approximately midway along the track on the north side of the Okura River) and are often ferried across the river by private boat to Okura village and then walk up Okura River Road to

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Long Bay. When the northern entrance to the park is completed, a more direct route to the Park will be available via Vaughans Road and Piripiri Point Drive.

(j) ***The spatial and/or visual separation of the majority of these landscape features from urban development,*** noting that (as explained by Ms Absolum and Mr Mead) the Long Bay urban development has been specifically controlled to ensure that it is not visible from ONL 54 (Long Bay), nor visible in close to mid-range views from walkways throughout the central and northern end of the Regional Park. Further, the Wēiti development has been set well back from the coastal edge with a substantial buffer (approximately 400m) along its seaward frontage.

(k) ***The modest scale and sympathetic character of the existing Okura settlement,*** described in the BML Assessment as a "small, well defined village along the banks of the Okura River".

(l) The ***relatively well-integrated, rural residential*** development throughout the varied terrain at the ***western end of the Okura catchment.***

50. All of these landscape features are connected spatially and/or visually to each other, and to the site itself. By contrast, as I explained earlier, existing and anticipated urban development to the north and south is separated spatially from this setting by topography, landscape features, and planning controls in force under AUP:OIP.

51. In my opinion, the landscape values arising from the aggregation of these various outstanding and high value landscape features (including recreational features), in combination with the general absence of overtly urban development in their vicinity, their close proximity to the city and their accessibility, culminates in a landscape that has a distinctive 'sense of place' as a relatively tranquil and peaceful area where one can 'escape the city' and enjoy a landscape in which more natural landscape features, patterns and processes are to the fore.

[593] In the course of drafting this decision, we have carefully revisited the BML Report and Ms de Lambert's evidence. In both, the authors have considered the various identifications contained in the Unitary Plan and other documents and the factors identified in Schedule 7. However, we think that it is fair to observe that they do not appear to have stood back and taken a wider view arising from the connection between all of these factors and their aggregation at Okura which lead to Ms Gilbert's conclusion that the Okura landscape has a distinctive "sense of place". We consider that Ms Gilbert's comments are consistent with the finding made by the Court in the 1996 decision that the "landscape values in the Okura catchment are worthy of

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protection"[346] and with the identification of the "special nature and character of the area" in the 2003 Decision.[347] We accept and concur with the opinion which she expresses in her para 51 (above).

[594] We consider that the Court should be cautious about making decisions on the basis that particular areas have a *distinctive sense of place* or *special character*. Such expressions can reflect the subjective and emotional views of persons who have a particular interest in or relationship with an area. The WESI factors may be seen as an attempt on the part of the Court to identify an objective and analytical means of assessment of landscapes. However, we are satisfied that, in this instance, when the factors identified in Ms Gilbert's evidence are considered together with the facts that this is one of the last estuaries on Auckland's metropolitan east coast (if not the last) which is not subject to urban development and the only estuary where all of the identified factors may be found together,[348] the expressions *distinctive sense of place* and *special character* accurately describe the Estuary. We consider this means that the Estuary has a particularly high vulnerability to the potential adverse effects of urban development on its natural character and landscape qualities.

[595] As we observed previously, it appears to us that Ms de Lambert's failure to take a broad overview of the aggregated qualities of the Estuary and to specifically address the matters of shared and recognised values led to her underweighting the adverse effects of urban development at Okura in her assessment of those effects. We now assess the effects of urban development of the OHL land on the Estuary in light of those observations.

[596] Ms de Lambert acknowledged the contributions made by the OHL land to perceptions of naturalness within the Estuary. She recognised that the change of use of the OHL land from what she described as "peri-urban/rural fringe activities"[349] to the proposed residential activity would significantly alter the existing function and character of the OHL land. She said that ... "it is my opinion that the (OHL) development would result in up to ***moderate adverse*** effects on the perceived level of naturalness within the estuary."[350] She considered that there was no indication that the OHL land contributes to the natural characteristics of HNC Area 94 (whose

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346 1996 deicsion at page 82.
347 Decision A095/2003 at para [67].
348 NOE at page 632.
349 de Lambert EIC at [5.35].
350 de Lambert EIC at [5.37].

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identified boundary cuts down the middle of the Estuary) and that any adverse effect of development on the OHL land on the sensory values of the HNC Area would be "low to ***very low***".[351]

[597] Ms de Lambert then undertook an Assessment of Effects of development of the OHL land on ONL Area 51. We understood this to be a wider assessment than just the sensory assessment to which we previously referred. She undertook this assessment in terms of the values contained in ONL Area 51. Relevantly, for our consideration, she referred to:

- Memorability, which the Unitary Plan rated as ***High***. Ms de Lambert assessed the effects of change resulting from the OHL proposal in these terms - "The level of change proposed and its visibility from within the ONL will alter the balance between open space and development, which will have an impact on the memorability values of the ONL area. However, the effect specifically on the values given in the PAUP would likely be limited, given that the sequence of natural elements to which it refers, would remain unchanged";[352]
- Expressiveness, which the Unitary Plan again rated as ***High***. Ms de Lambert assessed the effects of change resulting from the OHL proposal in these terms - "Given the scale of the earthworks likely required, in addition to the level of development, it is likely that these values would be impacted to a degree. However, it is considered that a high level of cohesiveness would remain despite the development, especially given the proposed set back from the coastal margin, the pattern of vegetated gullies retained, and the overall balance of development to open space proposed. It is also likely that the level of enhancement planting proposed will assist in maintaining the quality of the river/estuarine corridor supported by native vegetated margins".[353]

[598] Ms de Lambert considered that the effects of the OHL proposal on how ONL 51 would be perceived and experienced were "no greater than a ***very low adverse*** effect on the ONL overall".[354] She pointed to what she regarded as significant beneficial effects on the ONL which would result from protection of the

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351 de Lambert EIC at [5.40].
352 de Lambert EIC at [5.48], Table 1.
353 de Lambert EIC at [5.48] Table 1.
354 de Lambert EIC at [5.57].

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coastal reserve and its planting/management. She was of the view that the ONLs affected by development on the OHL land "will remain entirely valid and appropriate following the proposed development".[355]

[599] Ms de Lambert analysed the effects of the proposed OHL development on viewing audiences from a number of positions. She assessed the changes to the character of the outlook towards the Estuary for viewing audiences on Vaughans Road as being likely to be moderate adverse as she did for persons viewing the Estuary from the west. She made a similar assessment for persons who obtained views towards the Okura land from areas to the north, including the Okura Bush Walkway, Dacre Point and the Estuary itself although she acknowledged that ... "such users have a high sensitivity to changes within their views. This is because the enjoyment of their chosen activity has a close relationship with the amenity of their surroundings". Ms de Lambert noted that persons using these areas would be aware of the substantial change in the catchment and that the effect on the amenity values of walkway users would be ***"moderate adverse"*** overall".[356]

[600] Ms Absolum considered that "the open rolling rural landscape of the OHL land is sensitive to change and urban development within the visual catchment of the ONL will lead to the degradation of its values".[357] She went so far as to contend that if the southern edge of ONL 51 was already urbanised, the Estuary would not be identified as an ONL.[358] She contended that the character and quality of the landscape on either side of the Estuary were important factors in its identification as an ONL. Ms Absolum pointed to the strong interaction between the coastal marine area and the rural hinterland and considered that the scale of development within the three pods of residential development would create "significant adverse effects on the coastal landscape character".[359]

[601] In terms of visual effects, Ms Absolum assessed the current amenity values of views from Vaughans Road to the Estuary as high. She considered that development of the kind envisaged by OHL would create a strong discontinuity with the surrounding landscape and that adverse effects from Ms de Lambert's viewpoints would be moderate.

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355 de Lambert EIC at [5.58].
356 de Lambert EIC at [5.82].
357 Absolum EIC at [12.3].
358 Absolum EIC at [12.6].
359 Absolum EIC at [12.16].

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[602] In her assessment of effects of development of the OHL land on the Estuary and the Okura Bush Scenic Reserve on its northern side, Ms Absolum noted that visual amenity values from these viewpoints were very high. She testified that from these areas extensive views will be available of residential development rising up the coastal slopes to Vaughans Road and that as these locations "are primarily accessed for recreational activities such as walking the coastal path on the northern side and boating/fishing on the estuary, this change in the character of the view will reduce amenity values and result in moderate to high adverse visual effects".[360]

[603] Ms Absolum returned to this aspect in her assessment of effects of the OHL proposal on ONL 51, again noting the close relationship between the coastal slopes of the OHL land and the Estuary. She considered the effects of the OHL proposal on existing visual amenity values from within or near the ONL from a number of viewpoints and by reference to photographs identified in a table in her evidence.[361] She assessed existing visual amenity values of these areas as Moderate/High to Very High and the adverse effects as ranging from Moderate to Moderate/High.

[604] Ms Absolum also undertook a Natural Character Effects Assessment of HNC Area 94 (the Okura River). She again referred to the "very strong linkages between the subject land and Area 94".[362] Attached to her evidence (Figure 18) was an enlargement of a photograph taken from Dacre Point on the national walkway, on which she had indicated the east-west extent of the view of residential development on the OHL land which would be available from this location. She commented that "the stark contrast between this urban land use and the adjoining Regional Park to the west (sic – east) … and the more structured and vegetated CSL around Okura Village to the west … would, in my opinion, create significant adverse effects on the characteristics and qualities that contribute to the natural character values of HNC Area 94, the Okura River". She concluded her evidence with the observation that residential development as proposed on the OHL land would not preserve the natural character values present but would create significant adverse effects.[363]

[605] Like the other witnesses, Ms Gilbert assessed visual effects of the OHL

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360 Absolum EIC at [13.11].
361 Absolum EIC at [13.49].
362 Absolum EIC at [14.3].
363 Absolum EIC at [15.6].

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development on users of the Estuary and its surrounds from a number of viewpoints. The first of these was from Vaughans Road. Ms Gilbert considered that the introduction of urban development into the midground from Vaughans Road would form a marked contrast with the more natural aspects of the outlook, including the estuarine and coastal waters and the dense bush-clad slopes along the north side of the Okura River. She considered that adverse visual effects in relation to the viewing audience from Vaughans Road would be Moderate. In considering visual effects from residential areas to the west and around the Okura village, Ms Gilbert was of the view that adverse visual amenity effects would be likely to range from Moderate to Moderate-Low.

[606] Ms Gilbert then addressed visual effects of the OHL proposal from the southern (Okura boat ramp) and northern (Okura Bush Walkway) sides of the Estuary. She referred to the extent of use of the Estuary along both the Walkway and intertidal areas. She noted that from a length of approximately 1km of the Walkway the entire OHL land was visible. She expressed the opinion that "the proposed development will introduce a dense urban patterning that forms a jarring contrast with a predominantly 'green' setting, comprising the low-key and well-vegetated Okura settlement, the open and spacious regional park (where visible), and the seemingly 'untouched' visual character of the estuary itself".[364] She considered that the adverse visual effects for audiences from these northern viewpoints were Moderate-High.

[607] Ms Gilbert also addressed the visual effects associated with construction on the OHL land, noting that while development was likely to be staged and that development effects were strictly speaking, 'temporary', the sheer scale of disturbance meant that adverse effects of large expanses of exposed ground and the like would be experienced for a considerable period of time.

[608] For these reasons, Ms Gilbert was of the opinion that there would be significant adverse visual effects from the proposed OHL development on users of the Walkway and Estuary. She also noted that these areas form part of HNC Area 94 and testified that:[365]

> In my opinion, the sheer expanse of urban development visible on the hill slopes that frame the area will destroy the existing impression of the estuary as a tranquil and peaceful haven 'away from the city'. In terms of Policy E18.3 of AUP:OiP, urban

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364 Gilbert EIC at [84].
365 Gilbert EIC at [121].

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development would have significant adverse effects on HNC Area 94, which clearly has a 'visual linkage' with the site.

She rated these adverse effects on HNC 94 as Moderate-High.

[609] Ms Gilbert then went on to assess the effects of the OHL proposal on biophysical characteristics. She noted the effects of extensive earthworks which would transform the OHL land from a relatively complex landform to a far simpler one. She questioned the sensitivity of the OHL approach to earthworks, which did not seek to retain many stream corridors or preserve the underlying structure of the land which would have been a more sympathetic approach to development of the land.

[610] In summary, it was Ms Gilbert's view that the OHL proposal would:

- Destroy the relatively tranquil, "escape from the city" sense of place associated with the Okura area;
- Significantly detract from the values attached to the Okura Bush Walkway, the Estuary and Te Araroa;
- Significantly detract from the natural character values of the HNC areas and the Estuary;
- Significantly detract from the landscape values associated with the ONLs in the vicinity.[366]

*Regional park/north eastern viewpoints*

[611] We now consider effects on natural character and landscape values from the north-eastern aspect of the OHL land. At this point, the OHL land adjoins Piripiri Park which is managed together with the Regional Park as effectively one entity and we will simply refer to both jointly as the Regional Park. The Regional Park in this vicinity largely comprises rolling farmland with a walking track around its outer (coastal) boundaries which are marked by steep coastal cliffs. The coastal margins of the Regional Park are included in either ONL 51 (the ONL immediately bordering the OHL land) and ONL 54, east and south of the Estuary's southern headland.

[612] Much of the Regional Park in this area, including all of the Regional Park walkway, is included in HNC Area 95 which extends to the north-eastern tip of the OHL land. As well as being part of the Regional Park walking system, the coastal

[366] Gilbert EIC at [157].

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walkway is part of Te Araroa.

[613] As was the case in our discussion as to effects of the OHL proposal on the Estuary and its surrounds, the OHL proposal does not involve physical intrusion into the HNC Area. We think that it was common ground between the landscape experts that the areas of pasture contained in the OHL land contribute to the open aspect and character of the HNC Area and Regional Park. The issue before the Court is how the OHL development will impact on the natural character of HNC Area 95, the Regional Park and the appreciation of that natural character of those areas by the persons who use and recreate in them.

[614] Ms de Lambert considered that ... "the ability for people to sight development within the Okura land, from within Area 95, will be limited (chiefly by intervening landform) across much of its defined coastal extent. As a result, it is my opinion that the proposal would have no more than a ***very low adverse*** effect when considered against the given, overall perceived natural values, of this HNC area".

[615] Ms de Lambert went on to assess visibility of the OHL proposal and how it will affect the visual amenity of viewing audiences by reference to what was commonly referred to by the experts as Viewpoint 6, which was a point along the coastal track on the northeastern end of the Regional Park. Views from this point included the open pastoral lands of the Regional Park itself and the eastern spur situated on the OHL land. Ms de Lambert recognised that views of construction on the OHL land would be visible from this viewpoint, but considered that prominence would be "relatively unremarkable, if it were to remain off the elevated parts of the spur".[367] She considered that any impact on users of the walkway would be very limited, but acknowledged that the visibility of new suburban development would adversely affect their amenity to a low to very moderate level.[368] She noted that lengthy sections of Te Araroa pass through urban areas within Auckland and considered that the view to the OHL land was a minimal part of a diverse context for the walkway.

[616] Additionally, Ms de Lambert referred to Photographs 1 and 2 in Ms Absolum's evidence, which were additional locations represented by viewing points within the Regional Park and included as Viewpoints 7 and 8 in the landscape witnesses'

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[367] de Lambert EIC at [5.85].
[368] de Lambert EIC at [5.86].

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combined bundle (30 August 2017). Although these viewpoints are not currently accessible to the public, they will become accessible on completion of the current subdivision of the OHL land creating the further additional lots[369] and both will offer expansive views across the OHL land. Ms de Lambert acknowledged that suburban development would become a prominent feature affecting amenity values of people within these areas by up to a moderate level, although she was uncertain as to the extent to which there would be public access to the area shown in Ms Absolum's Photograph 2.

[617] Ms Gilbert had referred to a further three viewpoints from this area in her evidence. Ms de Lambert considered that the views from these viewpoints would be screened by future planting which would ensure that the proposed development would not adversely affect the sense of separation from residential development. In summary, Ms de Lambert was of the view that any adverse effects on views from the Regional Park walkway system (Viewpoint 6) fell into the low-moderate levels.

[618] Ms Absolum had a different opinion as to the effects, which would be generated by development of the OHL land on the northern part of the Regional Park. She referred to a statement in the Long Bay Regional Park Management Plan that:

> The portion of the park north of the Vaughan Stream, which is currently farmed and is relatively free from the influences of the urban area, retains its countryside ambience.[370]

She noted that the northern areas of the Park were wilder and more open than the southern areas, giving an experience of "leaving the city behind".[371]

[619] It was Ms Absolum's opinion that the scale of residential development proposed on the OHL land would be in stark contrast to the open areas of the Regional Park and because the interaction between the coastal marine area and its rural hinterland was particularly strong across the OHL land, this would create significant adverse effects on the coastal landscape character.[372] She further considered that the construction of somewhere between 1200 and 1900 buildings "in large conglomerations across the landscape, along with associated roading and other

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369 As shown on Drawing A15221C 505 in the Engineering Approval for integrated subdivision consent SA3022737 (4 July 2016).
370 Absolum EIC at [13.16].
371 Absolum EIC at [13.18].
372 Absolum EIC at [12.16].

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infrastructure, will completely undermine the existing amenity values of this land".[373]

[620] In her assessment of the OHL proposal, Ms Absolum had this to say about the visual effects of development on the OHL land from Viewpoint 6, where Ms de Lambert had made an assessment of low/low moderate. Ms Absolum considered that:

> The development of medium density housing along the crest of the ridge in the distance under the OHL appeal scenario will have high adverse visual effects on those visiting the northern part of the Regional Park. Instead of experiencing the attractive, wide, coastal and estuary views within the context of an open rural backdrop, the urban development on the skyline, together with the earthworks necessary to enable that development to occur, will remove any sense of escape or remoteness from the experience and impose a densely built and structured urban layering across the landscape.[374]

[621] Ms Absolum's Photograph 1 was taken on the boundary between the Regional Park and OHL land, on what she considered was the route of a likely future loop path around the northern end of the Regional Park. She assessed visual amenity values in this and other similar views as currently high and opined that the proposed development on the OHL site would seriously reduce visual amenity values for park users and create very high adverse visual effects on viewing audience in this vicinity.[375]

[622] Ms Absolum noted that as a result of the Long Bay Decision a range of building and subdivision controls were imposed on development in the Long Bay catchment to avoid visual and amenity impacts on the northern areas of the Regional Park from that development. A landscape bund is to be formed along the edges of the Regional Park so that houses in Long Bay are not visible from three identified viewpoints within the Park.[376] Ms Absolum considered that the effort to exclude views of urban development from the identified viewpoints would be completely undermined by the development of medium density residential development on the OHL land bordering the Regional Park and that the Long Bay Precinct Provisions will accordingly be rendered "irrelevant".[377]

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373 Absolum EIC at [12.17].
374 Absolum EIC at [13.22].
375 Absolum EIC at [13.27].
376 We understand the bund to be visible in the Landscape Common Bundle at Viewpoint 13.
377 Absolum EIC at [13.29].

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[623] Ms Absolum's views in this regard were consistent with the evidence of lay witnesses for the Society. Ms Bettany referred directly to the findings of the Court in the Long Bay case as to the significance of the Piripiri Point ridge and the remote quality of the northern end of the Regional Park. She testified that she had walked to the end of the Regional Park on many occasions and expressed the view that if urban development was to occur on the OHL land, it would clearly be seen from many parts of the western and northern parts of the park as there would be dense housing on the slopes of the OHL land which would resemble the development at Long Bay.

[624] Other witnesses for the Society referred to the "getting away from it" aspects of the northern end of the Regional Park and the impact which development proposed by OHL would have on that experience. By way of example we refer to the evidence of Mr Stanley, who described the northern part of the Park as a "wilderness area" enjoyed by people who go there to "walk, to exercise and communicate with nature and enjoy the open ambience of that area, including the wonderful Gulf views"[378]. A feature of the area from Mr Stanley's point of view was the "quiet rural tranquility of the green fields".[379] Mr Stanley's evidence was all the more convincing because it was unscripted being made in the course of oral comments to the Court. It emphasized for us in *non-expert* terms the relationship between the Regional Park and the surrounding rural environment. The evidence of the Society's witnesses was consistent with that of Ms Absolum regarding these issues.

[625] Ms Gilbert had also pointed to the importance of the Regional Park as a peaceful refuge away from the city and that "a series of devices have been introduced to ensure that urban development is not visible from the central and northern portion of the park".[380] She concurred with Ms Absolum's comments with regard to views from the Regional Park, based on Viewpoint 6. In assessing the effect of development on the OHL land on views from this area, Ms Gilbert endeavoured to make allowances for mitigating planting and the like, although she considered that such effects would be limited.

[626] Similar to Ms Absolum and the lay witnesses, Ms Gilbert referred to the likely effects on visual amenity from the important viewpoints identified in the Long Bay Precinct Provisions. She considered that urban development on the OHL land would

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378 NOE at page 296.
379 NOE at page 296.
380 Gilbert EIC at [49(h)].

be visible at close range from these viewpoints which would detract from the visual amenity throughout the northern part of the Regional Park and would be at odds with the policy intentions of limiting the visibility of urban development at Long Bay. She was of the opinion that adverse visual effects in relation to viewers from these areas would be high.[381] She concurred with Ms Absolum's assessment of adverse visual effects on viewers from Ms Absolum's photograph 2 or Viewing Point 8 as very high.

[627] Insofar as effects on natural character were concerned, Ms Gilbert considered that the failure of the BFM Report to recognise the visibility of the proposed urban development from the central portion of the Regional Park, together with underestimation of visual effects in relation to users of the northern portion of the Park led to an underrating of effects on the perceived naturalness of HNC Area 95. She said that:

> Visible urban development will, in my opinion, significantly detract from the naturalness associated with these parts of the park, and in so doing, undermine the impression of the central and northern end of the park as a relatively secluded 'escape from the crowds'.[382]

Again, Ms Gilbert referred to the planning provisions which had been put in place to avoid visibility of urban development from these portions of the Regional Park.

[628] Ms Gilbert's assessment was that the proposed OHL development would generate adverse natural character effects in relation to HNC 95 that rate as Moderate-High.[383] She stated that:

> The description of HNC Area 95 references 'very little development within the coastal environment'. In my view, the proposed urban development will significantly alter this aspect of natural character by introducing distinctly urban development within the immediate visual (and spatial) context of HNC Area 95.[384]

[629] We also note the evidence of the open space witness called by the Council (Mr E Barwell) that he "was employed by the North Shore City Council Parks Department just after Piripiri Park was acquired in 2002. I know first-hand that the reason for its acquisition was to add to the remote northern area of the Long Bay RP

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381 Gilbert EIC at [102].
382 Gilbert EIC at [127].
383 Gilbert EIC at [132].
384 Gilbert EIC at [163].

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and for it to be managed accordingly".[385]

[630] We accept the evidence of Ms Absolum and Ms Gilbert regarding adverse effects which development on the OHL land will have on natural character of the Regional Park and the amenity of its users. We consider that neither the BML Report nor Ms de Lambert in her evidence, adequately identified the more remote character of the northern area of the Regional Park or the nature of its use and the amenity values experienced by its users. Neither did the BML Report nor Ms de Lambert recognise and address to any appropriate extent the measures which the Long Bay Decision and subsequent plan provisions had put in place for the protection of views of urban development from the Regional Park and how that related to or might be emulated by this proposal. Instead there is an "esplanade" road proposed hard against the Regional Park boundary with development enabled on its western side.[386]

[631] The evidence of Ms Absolum and Ms Gilbert established that views across the Okura land from within the Regional Park will be considerably wider than identified by Ms de Lambert in para 5.44 of her evidence. When that factor is coupled with the significant amenity aspect which the (presently) rural environment of both the Regional Park and OHL land play in relation to the HNC Area and enjoyment of the Park walkway, we find that Ms de Lambert has considerably understated the adverse effects of development on the OHL land with her very low adverse effect assessment.

*Issues 1 and 2: Initial conclusions on natural character and landscape effects of the OHL Proposal on the OHL land, and the wider environment*

[632] It was common ground between the landscape witnesses that the proposed development will substantially alter the natural character of the OHL land, albeit recognising that it ranks at the lower end of the spectrum in terms of its natural character values. Notwithstanding Ms de Lambert's view to the contrary, we do not consider that the OHL land could be said to retain its underlying natural form if the proposed development proceeds. It would still continue to fall from Vaughans Road to the Estuary and its most prominent gullies will be retained and enhanced by planting, however the reality is that the natural contour of some 75 ha of the land, many of its watercourses and its open pastoral character will be extinguished by extensive earthworks and urban development. We consider that the proposed

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385 Barwell Rebuttal at [38].
386 Refer 1527.10.2 Okura: Precinct Plan 2 – Roads.

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development results in a fundamental change to the underlying natural form of the OHL land. In terms of s6(a) RMA the OHL proposal cannot be said to preserve the natural character of the land which is located in the coastal environment. We will return to the issue of whether or not the subdivision use and development proposed by OHL is inappropriate later in this decision.

[633] The second aspect of the effects of the OHL development is what Ms de Lambert described as the "knock-on impacts" on the natural character of the wider Estuary and the perceptions of that natural character for its viewing audiences.

[634] As part of their appraisal the three witnesses addressed the question of whether or not the ONL and HNC identifications would remain *valid* if the OHL proposal went ahead. Ms de Lambert considered that they would. Ms Absolum considered that the effects of the urbanisation of the south side of the Estuary were so adverse as to challenge the validity of ONL 51 itself.[387] Ms Gilbert was of the view that urban development would not protect these areas and would have significant adverse effects on them. She did not express a final view as to whether the areas would retain their ONL or HNC identifications, although we understood her to generally concur with Ms Absolum's opinion in that regard.

[635] We saw this debate as something of a diversion from the real issue before the Court although we assume that its underlying premise is that if adverse effects are of such consequence as to compromise the validity of an ONL continuing to be identified as such, then they must be very severely adverse indeed. That said, we observe that the test is not whether the ONL and HNC areas would retain their identifications should the OHL land be urbanised but rather whether or not the natural character of the coastal environment in this vicinity is preserved and protected from inappropriate subdivision, use and development and whether the identified ONLs are similarly protected. We consider subdivision, use or development to be inappropriate when it diminishes the natural character of the coastal environment to a degree which fails to preserve that natural character or diminishes the qualities which contribute to the outstanding nature of an ONL. We understood Ms de Lambert to concur with that test.[388] We consider that the test is consistent with the view expressed by the Supreme Court in *King Salmon*:

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387 Absolum EIC at [12.6], NOE page 451.
388 NOE at page 634.

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> We consider that "inappropriate" should be interpreted in s 6(a), (b) and (f) against the backdrop of what is sought to be protected or preserved. That is, in our view, the natural meaning.[389]

[636] All of the landscape witnesses recognised that urbanisation of the OHL land would have what Ms de Lambert described as a knock-on effect on the natural character of the Estuary. The real difference between the witnesses was as to their assessment as to the degree of adverse effect which would arise from that knock-on effect. Ms de Lambert ultimately assessed the adverse effects as being no more than moderate with regard to the various criteria which she assessed, by which she apparently meant minor. Ms Absolum and Ms Gilbert rated some aspects of adverse effects as being at the lower end of the scale of significance but recorded others as being significant. Their ratings in terms of Ms de Lambert's scale ranged from Moderate Low to High adverse effects.

[637] We accept the assessments of Ms Absolum and Ms Gilbert in that regard. For the reasons given previously we consider that Ms de Lambert has underweighted her assessment of adverse effects. We consider that Ms Gilbert in particular was correct in the recognition which underpins her assessment as to the particular sensitivity to development of the Estuary. We consider that the sheer scale of urban development proposed by OHL and the wide, highly prominent visibility of the OHL land from the Estuary and other viewing points at Okura will overwhelm the tranquil coastal nature of the Estuary. At the very least, the development will substantially diminish rather than preserve and/or protect the natural character of the coastal environment at Okura and the qualities which led to the identification of ONL 51.

[638] That brings us back to the characterisation made by Ms Gilbert and previously recognised by the Court as to the special nature of the Estuary and its environment and the "sense of place" which exists there. We consider that OHL and its advisors failed to recognize that. We accept the conclusions which were reached by Ms Gilbert in para 157 of her evidence and are summarized in.

[639] Viewed *in the round* we consider that the adverse effects of the OHL proposal on the Estuary and its wider environment will be (in terms of Ms de Lambert's scale)

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[389] *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38,[2014] 1 NZLR 593 at [105].

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High. Further, because the subdivision, use and development proposed by OHL will substantially diminish the natural character of the coastal environment at Okura and fails to protect the qualities which go to identification of ONL 51 it is inappropriate in terms of ss 6(a) and (b) RMA.

[640] We find that urbanisation of the OHL land will have high adverse effects on the natural character of HNC 95 by significantly altering its rural backdrop and high adverse effects on the amenity and experiential values of users of the central and northern parts of the Regional Park. The adverse effects on Park users are of the kind which the Court sought to avoid at the time of approval of the Long Bay development.

[641] Before we go on to summarise our conclusions as to the natural character and landscape effects of the OHL development, we address two matters which OHL contended needed to be taken into account in our assessment. The first of those is the comparison with effects which might arose on the OHL land as a result of CLZ permitted development on it and the second, is the outcome of mitigatory measures which OHL proposes to incorporate in its development.

*Issue 3: Effects comparison with CLZ Development*

[642] We refer to our earlier discussion regarding the comparison which OHL sought to make between its proposal and the CLZ status quo on the OHL property. OHL's position was that the words "most appropriate" in s 32(1)(a) require a comparative analysis of potentially available development options for its land to be undertaken, including options available under the Unitary Plan provisions proposed by the Council. It contended that its proposal cannot be considered in a vacuum and that it had to be acknowledged that the OHL land would not remain undeveloped. The potential development options before the Court are either the OHL proposal or permitted development under the existing CLZ zoning. OHL contended that CLZ development would lead to "29 large, peri-urban, rural residential lots, with no concept of design controls, or requirement that those developments control stormwater (or any other potential effects) in any co-ordinated or integrated manner."[390] OHL submitted that its development proposal would produce a better planning outcome than a potential CLZ development and would better achieve the sustainable management purpose of RMA.

[390] OHL Legal Submission at para 5.29.

[643] The term peri-urban appeared to imply that some form of urban environment would be established under the CLZ option. When Ms de Lambert was questioned about this, she advised that what the term meant was that the OHL site was close to or adjoining an urban area, not that the CLZ development itself would create an urban environment.[391] We concur with that.

[644] Examination of the relevant provisions of the Unitary Plan established that there are only limited constraints as to the nature of development which could take place on the OHL property under the CLZ zoning. We understand that the following relevant controls would apply to any residential development under the CLZ zoning:

- One dwelling per site up to nine metres high is permitted. Minor dwellings are enabled as a restricted discretionary activity;
- A 30 metre wide coastal protection yard applies to the stretch of coastline of the property, which adjoins the Estuary, so that buildings would have to be set back 30 metres from that edge;
- A riparian yard of 20 metres applies on each side of stream edges;
- 12 metre side yards are required so that houses will be a minimum of 24 metres apart when they are on adjacent sites;
- Land disturbance being general earthworks up to 1,000 $m^2$ and 1,000 $m^3$ as a permitted activity;
- There is no building coverage or maximum impervious area control.

[645] OHL pointed to the lack of controls in the CLZ zone as to matters such as building platform size, location of driveways, building location, height and colour of buildings, landscape and stream management, which it contended were necessary to protect rural character[392]. This led to OHL submitting that:

> Given the intrinsic values of owning land in this landscape, it can only be concluded that this will become a "millionaire's playground" which can be looked on from afar by the rest of Auckland. The large lots will not necessarily diminish the visual impact of ostentatious, conspicuous mansions along the shoreline and the ridges and will fundamentally alter the sense of place associated with Okura.[393]

[646] The OHL submission made something of a sustained attack on the likely

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391 NOE at pages 630 and 631.

392 The Court was concerned to note that controls previously included in the District Plan under the 2006 Decision have not been included in the Unitary Plan. We do not know if this was oversight or deliberate.

393 OHL Legal Submission at [15.5].

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outcome of development under the CLZ option, which it contended was an inappropriate development. It was submitted that:

> The dearth of controls leads inevitably to the conclusion that there is no guarantee that the rural character can be protected. The use of the land as a gated drive in enclave excluding everyone else from a prime perspective of the ONL is inappropriate in 2017. It is more than speculation to suggest the homes built on the CSL allotments will be anything other than statement homes. A gated community on the edge of the ONL will ensure that only the very rich can afford to purchase and build. As Ms Absolum stated in her evidence, "if everyone built a large dominant house then it would have an effect on the amenity and the sense of place".[394]

OHL sought to compare this contended situation with its development option which it claimed had been carefully designed to provide sensitive treatment of the transition from marine to terrestrial landscapes, had large open spaces connecting with the Regional Park and proposals for stream enhancement. It was OHL's position that for these reasons, its development option was the better of the two which were *on the table* before the Court.

[647] OHL's submissions reflected Ms de Lambert's view that the 4 ha CLZ site size meant that the lots would be orientated to lifestyle usage rather than productive land use. She considered that much of the land would probably remain in mown or grazed grass and that there would be a general impression of a domesticated landscape with trimmed hedges, walls, fences and garden type vegetation with a mix of exotic and indigenous species.[395] She considered that this was not a rural development in a traditional sense, but a peri-urban fringe, low density development defined by upscale residences and that this development would have an impact on the "rural-ness" of the character of the OHL land in any sense of being a natural landscape.[396]

[648] Ms Absolum acknowledged that development as permitted by the CLZ rules would undoubtedly change the character of the landscape, but considered that the landscape would nevertheless retain a rural character. She formed that view having regard to the separation and setback controls which would be in place relating to the Estuary, streams and buildings. She considered that these controls meant that individual buildings would be relatively isolated and surrounded by large areas of open green space under a variety of management regimes. Although this development

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394 OHL Submission at [15.14].
395 de Lambert EIC at [5.8].
396 de Lambert EIC at [5.10].

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would change the present rural character of the landscape, it would nevertheless retain a rural character as opposed to the urban development proposed by OHL, even acknowledging that very large houses might be built.

[649] Ms Absolum's view was based on more than just speculation. She lives on a farm property which was subdivided into CLZ sized lots and observed and photographed the changing nature of the landscape over a period of years. She noted the improvements in the properties concerned as a result of removing grazing animals from streams and expected that some land owners on the CLZ land would be likely to fence off their streams and plant riparian strips to improve the rural character of the properties. The CLZ development which she has observed led to once open, erosion prone pasture land becoming well treed with shelter belts and gardens which created a complex vegetative pattern across the landscape. She made reference to similar experiences closer to the subject land.[397]

[650] Ms Gilbert was less confident than Ms Absolum as to the character of residential development which might take place on the CLZ land. She was concerned about the relative lack of control on permitted activity development in the zone and considered that it was plausible that 29 high value dwellings could be established throughout the area while recognising that these would be subject to the various setback controls which we have previously described. Ms Gilbert accepted that a proportion of residences which could be established under a CLZ zoning might not fit comfortably within the rural coastal context and that CLZ zoning could lead to adverse visual effects on natural character and landscape values.

[651] However, Ms Gilbert was not prepared to go as far as OHL's contention that 29 dwellings in the CLZ zone would likely be in the form of an existing mansion type dwelling already in place at 189 Vaughans Road. She said that it was her experience that some people might choose to build a mansion and others would build something relatively discrete and private. She based that view on her observations of a development of similar size lots at Whitford which also had coastal views but had not developed in the manner that OHL suggested was inevitable. In short, Ms Gilbert did not accept the contentions made on behalf of OHL in that regard but did acknowledge the potential for there to be adverse effects from CLZ development.

[397] Absolum EIC at [7.7].

[652] Notwithstanding that acknowledgement, Ms Gilbert was of the opinion that CLZ development would be of a "distinctly non-urban pattern" and would retain the basic landform pattern of the area. For these reasons, she considered that the sort of development likely to occur under CLZ zoning would be markedly different from the urban pattern associated with Long Bay. Comparing the visual effects of the two potential development regimes, Ms Gilbert considered that:

- A CLZ development "will read as a relatively spacious and, consequently, sympathetic rural residential pattern flanking an overtly natural estuarine landscape. Overall, the visual impression of a 'green' dominated outlook will remain";[398]
- Insofar as the proposed OHL development was concerned, Ms Gilbert considered that by contrast to the CLZ development, the OHL development "will appear as a distinctly urban pattern that forms an incongruous and discordant contrast to the relatively spacious and green landscape context. The lie of the land and orientation of the viewer is such that the proposed coastal reserve will not read as a meaningful buffer in these views".[399]

*Issue 3: Initial conclusions on effects comparison with CLZ development*

[653] We consider that there was an element of unreality about OHL's attempt to equate or compare the adverse effects of CLZ development with OHL's development proposal. The infrastructure works for the CLZ development (other than the last remaining eastern most allotments) have been completed and are in place. Development has been undertaken following the natural form of the land. Permitted activity earthworks to enable the construction of houses together with their internal access ways and related curtilage development will be undertaken but the underlying landscape will retain its natural form and an essentially rural character.

[654] The OHL proposal involves substantial restructuring and contouring of its property with some 1.3 million $m^3$ of earthworks. Other than the fact that the land will continue to slope from Vaughans Road to the Estuary and that the largest gullies will be retained, its underlying natural landform will be replaced by a manufactured landform designed to accommodate residential development.

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[398] Gilbert EIC at [73].
[399] Gilbert EIC at [74].

[655] Further to the difference between the two options in terms of alteration to the underlying landform, there is the issue as to the extent of development allowed by each. Ms Absolum noted that if each of the 29 CLZ lots was to have 800m$^2$ footprint of house and ancillary buildings on it, that would equate to coverage of approximately 23,200 m$^2$. She noted that based on Mr Mead's calculations, 1900 dwellings (including the FUZ land) with an average footprint of 250m$^2$ would equate to building coverage of 475,000m$^2$. Acknowledging the dispute between the parties as to the number of dwellings which might actually be built under the OHL proposal, even allowing for 1200 dwellings at an average footprint of 200m$^2$ (a modest size by current standards) there would be 240,000m$^2$ of building coverage on the land under the OHL proposal. In his submissions for the Society Mr Williams contended that there would be in the order of 200,000m$^2$ of built development. Whatever figure is adopted, it is greater than a CLZ development by many degrees of magnitude.

[656] Ms de Lambert agreed that the 29-house development was of a rural type whereas the OHL development was urban.[400] That acknowledgement is pertinent in light of the finding of the Court in its 2003 Decision that development on the OHL land must be such as to present an obvious and continuing contrast to the urban development in Long Bay. Notwithstanding the contentions advanced by OHL as to the appropriateness of the 4ha lots, it is apparent that the size was imposed by the Court in 2003 specifically to provide that contrast.

[657] We accept the evidence of Ms Absolum and Ms Gilbert that the effects of CLZ development will be considerably less adverse in terms of natural character and landscape values than will the effects of urban development in accordance with the OHL proposal. Both Ms Absolum and Ms Gilbert recognised that adverse effects on these values could be generated by a CLZ development because of the potential for such development to lead to the establishment of very large, sometimes incongruous residences on at least some of the CLZ lots. Notwithstanding that, they were both of the view that under a CLZ development the OHL land would retain a degree of natural, rural character which would disappear under the OHL proposal. We think that they were simply stating the obvious.

[658] We find that in terms of effects on natural character and landscape values, development in accordance with CLZ zoning is a more appropriate use of the OHL

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[400] NOE at page 639

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land than urban development as proposed by OHL.

*Issue 4: Adequacy of Compensatory/Mitigatory Measures*

[659] OHL contended that the effects which urban development would have on the OHL land and the character of the Estuary and surrounding environment would be substantially mitigated by enhancement proposals which form part of its development plan. These fell into three categories:

- An extension of public open space contiguous with the Regional Park which would be effected by the vesting of reserve along the Estuary frontage of the OHL land and the creation of walking accessways through the OHL land;
- Enhancement of approximately 76 percent of the OHL land's permanent and intermittent streams;
- Additional planting within the coastal reserve area and riparian planting (approximately 7 ha) along stream courses within the proposed open space zones to be created under the OHL structure plan.

There is a degree of interrelationship between these various enhancements and we will discuss them together.

[660] OHL proposes that reserves and open spaces will occupy 55 ha (or approximately 42 percent) of the 130 ha site. These open areas will include the central gully system which in places is over 200m wide and the coastal edge, which ranges from 70 to 170m in width over a distance of approximately 2kms along the estuary frontage of the OHL land. The north-eastern end of the open space area adjoins the Regional Park so that walkways along the riparian margins and coastal strip of the OHL land would connect to the Regional Park walkway system. (We observe that we do not see contended access benefits of the OHL proposal as being a mitigation for adverse natural character/landscape effects of the development. We will address walkway issues separately in due course.)

[661] The enhancement areas in question would be protected by being vested as reserve (in the case of the coastal area circa 20 ha) or zoned as Conservation-Open Space in the case of the riparian/gully areas (35 ha).

[662] Ms de Lambert considered that the net effect of OHL's stream enhancement

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proposals on the biophysical values of the water courses on its land would be of moderate to high significance and primarily positive in nature. She saw the co-ordinated restoration of riparian corridors as a key benefit of the comprehensive development of the land. She contended that the proposed riparian and coastal planting would "contain" the areas of residential development on the OHL land.[401] Although we were given no precise details of any planting plan within the coastal reserve, it was Ms de Lambert's understanding that OHL intended to plant appropriate indigenous species as well as provide open space for passive recreation. She offered the view that:

> Overall, I consider that the proposal will present a number of positive opportunities, not only for the enhancement of the waterways within the Okura land, but also for its vegetation framework, including that of its coastal margins. In my opinion, these physical enhancements would also offer mitigation to the likely adverse effects that the proposal would have on the character and visual amenity of the estuary.[402]

[663] Ms Absolum disagreed with Ms de Lambert's assessment of the benefits of coastal planting as mitigation of adverse effects of urban development on the character and visual amenity of the Estuary. She was unclear as to the details of the vegetation regime which would be established (as are we) but made the point on a number of occasions that even with vegetative screening in place, residential development would be visible from the Estuary and northern viewing points, rising up from the coastal slopes to Vaughans Road and extending along the majority of the OHL land. Ms Absolum recognised that green fingers of open riparian space and drainage reserves are proposed to break up the expanse of urban development but considered that ... "the sheer extent and density of residential development will, in my view, create significant adverse effects on the natural character of the Estuary".[403]

[664] Ms Gilbert accepted that OHL's proposals for retention of existing native vegetation and the establishment of a framework for native riparian and coastal planting had more certain benefits than the potential outcome under a CLZ development which imposed no specific requirements for riparian planting on lot owners. She considered that establishment of publicly accessible open spaces and walkways "would appear to comprise appreciable landscape enhancements".[404] However, Ms Gilbert had similar misgivings to Ms Absolum as to the benefits of

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401 de Lambert EIC at [5.59].
402 de Lambert EIC at [5.63].
403 Absolum EIC at [14.4].
404 Gilbert EIC at [135].

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planting along the coastal reserve, even accepting that such planting might provide some filtering effect to any development on the lower slopes. She considered that because urban development would extend across large areas of the more elevated parts of the OHL land to the ridgeline "limited weight" could be placed on the mitigation benefits of the coastal reserve plantings.[405]

[665] Ms Gilbert was questioned about what Ms Simons described as the design driven approach undertaken by OHL to development of the land. Ms Gilbert made the observation that "... in terms of mitigation from my perspective, the first and most important tool is location. And then it follows with design and then, you know, mitigation planting and the like. So, if you fundamentally got the location wrong, no amount of good design can fix that".[406] Ms Gilbert was also questioned as to the mitigating effect of what she referred to as the "swathes" [407] of riparian corridors but was of the view that notwithstanding the existence of the swathes of planted land, there would be broad views of all of the OHL land from the north. She considered that it was difficult to assess the likely benefits of the swathes from other potential viewing areas because of the lack of detail about them. She concurred with Ms Simons' proposition that from the northern perspective, the urban development would not have been seen as one agglomeration, but rather as three areas of urbanisation. She recognised that there would be a break between the three areas, but was unable to say what the character of that break might be.[408]

[666] Like Ms Absolum and Ms Gilbert, we had some difficulties with OHL's position as to the beneficial effects of the riparian and coastal plantings, due to an absence of any real detail as to what was proposed. We understood Ms de Lambert to acknowledge that there was a shortcoming in this regard and that these matters would be determined as part of any future development design and resource consent applications.[409]

[667] For the purposes of this discussion we accept the general proposition that well designed riparian and coastal enhancement plantings have the potential to mitigate some of the adverse effects of the proposed OHL development, but it is very difficult to assess the extent of the enhancement in the absence of significant detail. We note

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405 Gilbert EIC at [82].
406 NOE at page 413.
407 NOE at page 414.
408 Gilbert EIC at [415].
409 de Lambert EIC at [5.62].

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Ms de Lambert's reference to planting and vegetative restoration providing a framework which would contain the areas of residential development. We understand that to mean that residential development will be contained in the identified nodes which are delineated by the riparian areas and coastal margin where urbanisation cannot extend. We accept that is the case.

[668] However, as Ms Gilbert observed, this is a high, sloping site where even a generous landscape buffer will not absorb or mitigate the effect of the development.[410] In our view, there is considerable merit in her observation as to the first mitigation measure being site selection. OHL proposes the urbanisation of an open, sloping, elevated site situated in an environment which is highly sensitive to the effects of development. These features make adequate mitigation of the adverse effects of development of the site extremely difficult, if not impossible. We accept the views advanced by Ms Absolum and Ms Gilbert in that regard.

[669] For all of the foregoing reasons, we determine that although coastal and riparian enhancement measures have the potential to mitigate some adverse effects of OHL's proposed development, they must fall well short of adequately mitigating those effects. We consider that the extent of residential development proposed (75ha) extending from the lower slopes of the OHL land, across the width of the property up to the Vaughans Road ridgeline will overwhelm any mitigating effect which might be achieved by coastal and riparian planting.

*Conclusions as to effects of the OHL Proposal on natural character and landscape values*

[670] We have reached the following conclusions as to the natural character and landscape effects of the proposed OHL development on the OHL land and the Okura environment:

- The Estuary possesses high natural character and landscape values which require preservation and protection from inappropriate subdivision, use and development. Urbanisation of the OHL land will neither preserve nor protect these qualities;
- The Estuary is the last remaining estuary on the east coast of the former North Shore City which remains unaffected by urban development. It is subject to recognition and protection from a multi layered range of

[410] NOE at page 439.

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statutory provisions and instruments. It is the only estuary in Auckland City which is subject to this level of recognition and protection;

- The factors giving rise to the unique aggregation of layers of recognition and protection at Okura culminate in a landscape with special qualities and a distinctive sense of place;
- Urbanisation of the OHL land will remove the remnant natural pastoral character over 75 ha of the land;
- Except for remediation of some streams, urbanisation of the OHL land will adversely diminish the natural biophysical character of the land and the perception of that naturalness to a significant degree;
- Because of the visual and spatial linkages between the Estuary and the OHL land, urbanisation of the land will have a knock on effect on the natural qualities of the Estuary itself and on the perception of those qualities for viewing audiences. In each case the effects would be adverse to a high degree;
- Those high adverse effects relate to areas which are within the coastal environment and/or are identified as Outstanding Natural Landscapes or High Natural Character Areas;
- Because the subdivision, use and development proposed by OHL will substantially diminish the natural character of the coastal environment at Okura and fails to preserve or protect the qualities which go to identification of ONL 51 as outstanding it is inappropriate in terms of ss 6(a) and (b) RMA;
- Urbanisation of the OHL land will have high adverse effects on HNC 95 and the amenity and experiential values of users of the central and northern parts of the Regional Park;
- Urbanisation of the OHL land will have adverse effects which are considerably worse in terms of natural character and landscape values than a CLZ development;
- The adverse effects of urbanisation on natural character and landscape values which we have identified cannot be adequately mitigated by the enhancement and mitigation proposals advanced by OHL.

*Landscape: Assessment of effects against Relevant Unitary Plan Objectives and Policies*

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*Regional Policy Statement*

[671] Operative Section B4 of the Unitary Plan deals with outstanding natural features and landscapes. Consistent with the line of decisions in *King Salmon* and *Davidson,* the Section is applied as giving effect to corresponding provisions of the New Zealand Coastal Policy Statement (NZCPS) and s 6(b). Objectives B4.2.1(1) and (2) are:

> B4.2.1 Objectives
>
> (1) Outstanding natural features and landscapes are identified and protected from inappropriate subdivision, use and development.
>
> (2) The ancestral relationships of Mana Whenua and their culture and traditions with the landscapes and natural features of Auckland are recognised and provided for.

[672] The Objectives are to be given effect to by Policies B4.2.2. which relevantly include the following under the heading of *Identify, evaluate and protect outstanding natural landscape:*

> B4.2.2 Policies
>
> (2) Include a place identified as an outstanding natural landscape in Schedule 7 Outstanding Natural Landscapes Overlay Schedule.
>
> (3) Protect the physical and visual integrity of Auckland's outstanding natural landscapes from inappropriate subdivision, use and development.

*Regional Coastal Plan and District Plan*

[673] The preceding RPS B4.2 objectives and policies are implemented by Regional Coastal Plan and District Plan policy provisions.[411] These maintain and add specificity to the requirement that Auckland's ONLs be protected from inappropriate subdivision, use and development and that the ancestral relationships of Mana Whenua with ONL be recognised and provided for (Objectives D10.2(1) and (2)).

[674] The themes are continued in the D10.3 Policies[412] where it is specified that the physical and visual integrity of ONLs be protected by avoiding adverse effects on the natural characteristics and qualities that contribute to the values of the ONL,[413] maintaining the visual coherence and integrity of the OHL; maintaining the visual or physical qualities that make the landscape iconic or rare; or maintaining high levels of

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411 Noting that the RCP provisions are not operative until the Minister of Conservation has approved the RCP part of the Unitary Plan.

412 Subject to appeal CIV-2016-404-002299.

413 As set out in Unitary Plan Schedule 7: ONL Overlay Schedule.

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naturalness in ONLs that are also identified as high natural character areas[414].

[675] Protection of the ONL's physical and visual integrity is to take into account a variety of matters which include (summarised) the extent of anthropogenic changes to natural qualities and processes; presence or absence of structures; the temporary or permanent nature of adverse effects; the physical, visual and experiential values that contribute to significantly to the natural landscape's values. Going in the opposite direction so to speak is Policy D10.3(5) which is to "enable use and development that maintains or enhances the values or appreciation of an ONL …".

*Comment*

Objective B4.2.1 which is to protect ONLs 51 and 54 from inappropriate subdivision, use and development is unequivocal and directive. We accept Ms Gepp's submission that "protect" means "to keep safe from harm, injury or damage".[415] "Harm," as Ms de Lambert accepted,[416] is properly understood as an effect that causes detriment to the qualities and/or values in question. As Ms de Lambert also accepted, an appropriate test of whether subdivision, use or development is inappropriate is whether it would diminish those qualities which contribute to the scheduling of ONLs 51 and 54.[417] The test in B4.2.1 is not whether there would be significant harm to the qualities leading to scheduling as Ms de Lambert would have it. The directive is to protect the ONL's from inappropriate subdivision, use and development. As previously explained, the OHL and FUZ land is not overlain by either of the ONLs except for the former's coastal fringe. Development of the OHL and FUZ land would therefore not directly impact either of the ONLs to a great degree.[418] However, as Ms de Lambert acknowledged, from landscape and visual perspectives, it is necessary to consider the ONLs in conjunction with the OHL and FUZ land, as they are proposed to be developed, to ascertain whether the ONL qualities would be protected.[419] For example, when looking south from Okura Bush Scenic Reserve, Dacre Point and the Estuary what impact would there be on the qualities of ONL 51 when experienced in conjunction with development of the OHL land?[420] Or when the

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414 ONl 51 and 54 overlap with HNC 94 and 95 respectively.
415 *RFBPS of NZ Inc v New Plymouth DC* [2015] NZEnvC 219; (2015) 19 ELRNZ 122 at [63]
416 NOE at page 634.
417 NOE at page 634 – 635.
418 Recognising that the OHL Precinct structure plan provides for the coastal fringe to be zoned OS-Conservation.
419 NOE p 623
420 Refer Landscape Architecture Witnesses' Photographic Viewpoint Combined Bundle, 30 August 2017 View Points 4, 9 and 10.

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proposed development was viewed to the west, north and north east from the Regional Park's western boundary in conjunction with both ONLs.[421]

[676] We have found for reasons given previously that there would be a significant diminution of the qualities which led to the scheduling of both ONL 51 and 54 to the extent that they would not be protected as required by Objective B4.2.1(1). More particularly:

- With regards to ONL 51 the high, positive interplay between the sedimentary cliffs along the OHL frontage and the shallower intertidal area would be visually disrupted by the OHL development and FUZ land to the south. The River and Estuary would cease to be a strong focal point flanked solely by an attractive amalgam of flats, shoals and cliffs. We have also expressed reservations about the probability of the Estuary's natural resources maintaining their extant qualities. Overall we do not find that the ONL's high memorability, high naturalness, high expressiveness or high transient values would remain intact. In this circumstance the OHL proposal could not be said to protect the physical and visual integrity of the ONL from what would be inappropriate subdivision, use and development (Policy B4.2.2(3));
- With regards ONL 54 the dramatic profile of the southern headland, Piripiri Point, clearly etched cliff lines and those parts of the Regional Park within view and seascape would be visually disrupted by the OHL development and FUZ land to the west. This issue resonated in the evidence of lay persons, who clearly valued the landscape as an important reference point and part of their sense of identity.[422] As with ONL 51, we find that ONL 54's high memorability and expressiveness values would not remain intact and that its physical and visual integrity would not be protected by the subdivision, use and development proposed.

[677] We struggle to identify any aspect of the OHL or FUZ proposals which would maintain or enhance the natural values or appreciation of the subject ONLs including OHL's proposal for an esplanade reserve (Policy D10.3(5)). The planting proposals

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421 Ibid, VP's 7 and 8.
422 Unitary Plan, Schedule 7: Outstanding Natural Landscapes Overlay Schedule, ONL 54 Transient Values.

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for the coastal strip in ONL 51 described by witnesses may, if delivered, maintain and possibly enhance its naturalness but there was a lack of certainty in the Precinct Provisions around this as previously outlined. The most certain, positive outcome we have identified is the protection of archaeological sites, including those of value to Mana Whenua (Objective D10.2(2) and Policy D10.3(3)(c)).

[678] In making these findings we are mindful of the Unitary Plan's explanation and reasons for including the RPS ONL objectives and policies. (Section B4.6). Namely that:

> Where there are outstanding natural landscape values like [those we have described and discussed at Okura] new development should be undertaken in ways that are sensitive to these values so that they are recognised and protected. ... As part of providing for growth and greenfield development, the Unitary Plan recognises the pressures associated with .... transformation from rural to urban uses at the urban edge ... It also recognises that these outstanding natural landscapes and features are finite resources – once they are destroyed they are lost forever, and restoration options are limited. The focus is therefore on protection of values and the avoidance of adverse effects and guiding development to other locations where more intensive development may be appropriate.

*High Natural character in the coastal environment: Assessment of effects against relevant Unitary Plan objectives and policies*

[679] Operative Section B8 of the Unitary Plan deals with the coastal environment and relevantly in B8.2 with natural character in the coastal environment. Objectives B8.2.1(1) – (3) are as follows:

> B8.2.1 Objectives
>
> (1) Areas of the coastal environment with outstanding and high natural character are preserved and protected from inappropriate subdivision, use and development.
> (2) Subdivision, use and development in the coastal environment are designed, located and managed to preserve the characteristics and qualities that contribute to the natural character of the coastal environment.
> (3) Where practicable, in the coastal environment areas with degraded natural character are restored or rehabilitated and areas of high and outstanding natural character are enhanced.

[680] The objectives are to be given effect to by Policies B8.2.2 which relevantly include the following:

> Policies B8.2.2
>
> (2) Include an area in the coastal environment with outstanding or high natural

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character in Schedule 8 Outstanding Natural Character and High Natural Character Overlay Schedule.

(3) Preserve and protect areas of outstanding natural character and high natural character from inappropriate subdivision, use and development by:

(b) avoiding significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment.

[681] Section B8.3 is concerned with Subdivision, use and development in the Coastal environment. Objectives B8.3.1(1) and (2) are relevant as follows:

B8.3.1. Objectives

(1) Subdivision, use and development in the coastal environment are located in appropriate places and are of an appropriate form and within appropriate limits, taking into account the range of uses and values of the coastal environment.

(2) The adverse effects of subdivision, use and development on the values of the coastal environment are avoided, remedied or mitigated.

[682] The objectives are to be given effect to by Policies B8.3.2 which relevantly include the following for *Use and development*:

B8.3.2. Policies

(1) Recognise the contribution that use and development of the coastal environment make to the social, economic and cultural well-being of people and communities.

(2) Avoid or mitigate sprawling or sporadic patterns of subdivision, use and development in the coastal environment by all of the following:

(a) concentrating subdivision, use and development within areas already characterised by development and where natural character values are already compromised;

(b) avoiding urban activities in areas with natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character;

[683] The preceding objectives and policies are implemented by Regional Coastal and District Plan objectives and policies.[423] These apply to all activities undertaken in areas covered by HNC overlays, both above and below mean high water springs. The regional coastal plan and district plan objectives require that the natural characteristics and qualities of HNC areas are preserved and protected from inappropriate subdivision, use and development and, where practical, that areas with

[423] Noting that the RCP provisions are not operative until the Minister of Conservation has approved the RCP part of the Unitary Plan.

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HNC values in the coastal environment, including areas in the Hauraki Gulf, are enhanced (D11.2 Objectives).

[684] Greater specificity is provided by the D11.3 Policies which, amongst other things, provide that subdivision, use and development in Schedule 8 HNC overlay areas must avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects on the characteristics and qualities that contribute to the natural character values of HNC areas (D11.3(1)(b). This is to be done while taking into account similar matters to those described for ONL Policy D10.3(2) outlined above.

*Comment*

[685] As previously described, HNC overlays 94 and 95 are proximate to the OHL land. It is these HNC areas that Objective B8.2.1(1) requires be preserved and protected from inappropriate development. Policy B8.2.2(3) seeks the same outcome. In the current context "*preserve*" is appropriately understood to mean "*maintain (state of things); retain (quality, condition)*" while "*protect*" has the meaning applied above for ONLs [424]. The bio-physical characteristics and perceptual values that contribute to the natural character of HNC 94 and 95 are given in Unitary Plan Schedule 8.

[686] While there would be no direct impact on the bio-physical characteristics of either HNC we have found that the degree of adverse effects on habitat and ecological values in the Okura Estuary[425] from discharges and anthropogenic disturbance would be uncertain and possibly high. We have reached similar conclusions with regards the potential effects of discharges on those parts of HNC 95 in the coastal marine area at the Estuary entrance.

[687] We have no equivocation in finding that subdivision, use and development of the subject land as proposed by OHL would not preserve and protect the wider coastal context/setting and experiential perceptual values of either HNC area and, for this reason, would be inappropriate. There is a significant overlap here with our ONL findings so we do not repeat our reasoning except to note that the development proposed would especially fail to preserve and protect the scheduled perceptual values of HNC 95 where the OHL land and Regional Park abut. Schedule 8 speaks of HNC 95 having pockets of remnant and regenerating coastal forest backed by

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424 Concise Oxford Dictionary, 7th Edition reprinted 1987.
425 Described in Unitary Plan Schedule 8, Item 94 as the Okura River.

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pastoral farmlands and how "with very little development within the coastal environment, the open areas of pasture become subservient to the interplay of coastal vegetation, exposed scarps, … and open waters of the Hauraki Gulf". Subdivision, use and development right up to the Regional Park boundary with no intervening screening would have a severe, permanent adverse effect on these natural character values and, undoubtedly, be inappropriate.

[688] It follows that, in these regards, the proposal cannot be found to be located and designed in a way that accords with Objective B8.2.1(2) or to Policy B8.2.2(3)(b) in so far as the latter is concerned to avoid significant adverse effects on natural character in all other areas of the coastal environment.[426]

*Subdivision, Use and Development in the Coastal Environment: Assessment of Effects against relevant Unitary Plan objectives and policies*

[689] The proposal also does not give effect to the B8.3 objectives and policies for subdivision, use and development in the coastal environment. There is a degree of overlap between these provisions and those for ONLs and HNC areas. In the interests of reasonable brevity, we simply note that subdivision, use and development are to occur in appropriate places, in an appropriate form and within appropriate limits taking into account the values and uses of the coastal environment (Objective B8.3.1(1)).

[690] The proposal is contrary to or not supportive of many of the outcomes sought by Policy B8.3.2 as it would not concentrate development within an area already characterised by development where natural character values are already compromised (B8.3.2(2)(a)).

[691] While not directly impacting areas scheduled in the Unitary Plan for natural heritage and natural resources purposes we have found there would be an adverse effect on the former and a sufficiently high probability of significantly adverse effects resulting from urban activities on the latter to require a precautionary approach (Policies B8.3.2(2)(b) and B8.3.2(5)).

[692] When the policy suite is read as a whole, none of the unwanted outcomes described could be reasonably said to be offset by Policy B8.3.2(1), which is to

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426 "Other" being those in addition to ones with outstanding and high natural character.

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recognise the contribution that use and development of the coastal environment makes to the social, economic and cultural well-being of people and communities or Policy B8.3.2(7) which is to set back development from the coastal marine area, where practicable, to protect the natural character and amenity values of the coastal environment.

**Open space**

[693] Earlier in this decision we discussed OHL's proposal to provide some 55 hectares of "reserve areas" as part of its development proposal, in the context of the mitigating effects which the provision of such reserve areas might have on landscape and natural character values. We now consider another aspect of the OHL proposal, namely benefits which it contended its proposals would have in terms of provision of additional reserves/open space at Okura and in the extension of walking access to and along the Estuary as well as a potential connection to the wider walkway system.

*Issues*

[694] This issue requires consideration of two discrete topics:

- *Issue 1; The provision of additional open space;*
- *Issue 2: Walkway proposals.*

*The Parties' positions*

[695] The parties had diametrically opposed positions as to the benefits which might arise from OHL's proposals regarding the provision of open space and walkways. Again we will address those positions as part of our consideration of merits. As a general comment we observe that assessment of the benefits of the OHL proposal was not assisted by a lack of detail in a number of instances.

[696] We appreciate that the matter before us was not a resource consent application where more *fine grained* information might be provided, however we consider that when a proposal is advanced by a party on the basis that various benefits will arise from it, the Court must have sufficient information before it to satisfy itself that is the case. The failure to give detailed information as to how the reserves might be administered in the future if they were not vested in the Council was a matter

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of concern to the Court.

*The Expert Witnesses*

[697] A number of witnesses touched on these aspects of the OHL proposal in their evidence. However, we consider that the primary witnesses regarding these matters were:

- Mr E Barwell (for the Council);
- Mr K Cook (for OHL);
- Mr CG Jones (for OHL);
- Mr D McGregor (for OHL);
- Mr DWA Mead (for the Council);
- Mr PD Reaburn (for the Society and Forest and Bird).

[698] Messrs Barwell and Jones provided a joint witness statement on areas specifically relating to open space provision of walkways and open space. Messrs Cook, Mead and Reaburn provided a planners' JWS but did not address open space issues in that. We will address the relevant evidence of these expert witnesses where appropriate in our consideration. We will commence our considerations by firstly considering the matter of additional open space to be provided under the OHL proposal and then look at the walkway aspects of that proposal.

*Additional open space*

[699] As we have noted previously in this decision the OHL proposal is that approximately 55 ha of land will be zoned Open Space as part of the development. Somewhere in the order of 20 ha of the open space land is to incorporate the coastal strip between 70-170 metres wide along the 2 kilometre Estuary boundary of the OHL property. This area will be zoned Open Space Conservation Zone. The remaining 35 ha is to be generally made up of the riparian corridors to be established around the remnant stream and gully system and is to be zoned Open Space Informal Recreation.

[700] We do not consider that we are being unkind to OHL in describing its open space proposals as being inchoate. Although the OHL structure plan showed the position of the proposed open space areas, no detailed design was provided as to the extent of plantings proposed to be undertaken in the open spaces or the precise

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positions of and nature of facilities to be provided there. Ms de Lambert had accepted that the absence of detail made it difficult to assess the beneficial effect of open space proposal in terms of effects on natural character and landscape values and we find ourselves in a similar position in terms of assessing the extent of benefits which might emerge from the establishment of an open space network of the kind proposed by OHL. We accept that these proposals have the potential to provide public open space and recreational facilities with associated benefits to the community. That was agreed by the expert recreational witnesses in their JWS, but it is not possible to quantify the benefits of the open space network beyond that.

[701] Mr Jones identified what he saw as the open space/recreational opportunity benefits of the OHL proposal in these terms:[427]

> With optimisation, the OHL Okura Structure Plan has the potential to accommodate pocket parks, neighbourhood parks and a suburb park if these are desired. These parks could be located in any number of locations throughout the wider development area (including within the proposal's existing open space areas, as indicated in the evidence of Nick Barratt-Boyes) and would offer a wide range of opportunities for passive and active recreation. Particular emphasis could be placed on creating areas of flat open space for small community gatherings/casual ball sports. This would complement the other opportunities associated with track and green spaces.

[702] In his planning assessment for OHL, Mr Cook considered that the proposal would provide "quality open spaces".[428]

[703] Mr Barwell is a Principal Policy Analyst with the Parks and Recreation Policy Unit of the Council's Community and Social Policy Department. He explained to us the details of the Council's Acquisition Policy for open space acquisitions and identified that in terms of that Policy the OHL proposal would rate as being of high priority in terms of acquisition. He went on to explain, however, that even though the proposed open spaces might rate high in terms of the Acquisition Policy, they then had to be measured against the Council's Open Space Provision Policy. He advised that in accordance with that Policy "a rough estimate of the total area of open space that the council would acquire, including three neighbourhood parks and a 20m-wide coastal esplanade, but excluding riparian margin along internal watercourses is five and a half hectares, compared to the 55 ha that OHL proposes".[429] He explained that

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427 Jones EIC at [6.25].
428 Cook EIC at [2.6].
429 Barwell EIC at [9.6].

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the Council's ability to acquire land at any given time was dependent on budget available (as well as other factors) and that even if the proposed open space vested in the Council free of cost, operational funding had to be allocated from the Council's existing parks maintenance budgets and that the acquisition of additional land could impact on the Council's existing open space maintenance budget.

[704] Mr Barwell said that it was difficult to weigh up what the recreational benefits of OHL's open space proposals were because much of the open space was in the form of riparian corridors. He had not seen anything which indicated there might be flat land available where children could kick balls around for example. He said that he had seen no detail other than some green zoning on a map, which enabled him to actually assess the value of the recreational areas.[430] It appears to the Court from OHL's proposed Precinct Provisions that more specific proposals, than those described thus far, would not be forthcoming until the "master planning of the open space network" required by restricted discretionary application subdivision matter of discretion at I527.8.1(1)(c) was undertaken.

[705] Mr Barwell advised that he did not support the open space proposal, would not be able to recommend to the Council that it acquire the proposed open space, which he considered to be a major over provision (having regard to the proximity of the Regional Park) and that even if the land was vested in the Council at no capital cost, that ongoing operational expenditure would be unsupportable.

[706] There was some discussion during the course of the hearing as to the possibility of forming an incorporated society which residents of the OHL development would become members of and which would manage the proposed open spaces. We understand such an eventuality could be consistent with OHL proposed Policy I527.3(6):

> (6) To require the availability of the open space land for the public and master planning of the open space network and enable construction of primary roading in accordance with the structure plan, and
>
> I527.8.2(1)(d) RDA esplanade subdivision assessment criterion (v) "the mechanism or mechanisms to ensure the availability of the open space land for the public of each portion of the land zoned Open Space-Conservation".[431]

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430 NOE at page 106.

431 Presumably the same provision and/or approach is envisaged by OHL for the availability of OS-IR zone.

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We are unable to assess the full implications and practicalities of the Policy and related provisions on the basis of the evidence which we heard. Nor are we able to assess at this stage whether or not such an arrangement would guarantee the wider public benefits from the provision of open space which OHL contended its proposal provided.

[707] One obvious issue arising from the proposal to vest the open space areas in a "private" organization as opposed to the Council relates to ongoing maintenance and management of the streams lying within these areas. It is apparent that ongoing stream maintenance and management will be important factors to ensure that they remain in a healthy state and retain their structure. Failure to meet these requirements could mean that the contended ecological benefits of stream restoration are lost and loss of structural integrity could lead to the discharge of sediment into the Estuary. We are far from satisfied from the evidence which we saw that adequate attention has been given to ensuring that arrangements have been put in place to guarantee that these issues are adequately addressed.

*Walkway proposals*

[708] A significant benefit identified by OHL from its open space proposals was what was discussed in Mr Jones' evidence as *"Gains in Public Access"*. He identified those gains in these terms in his Evidence-in-Chief.

> 4.1 The proposal offers a significant opportunity for net gain in public access in multiple ways:
>
> (a) Providing new public access to a currently closed section of coastline between Antrim Bay and Piripiri Point. This would also contribute significantly to enhanced public access to the whole regional coastline between Long Bay and Whangaparaoa. This in turn would assist with the achievement of the long-proposed Coastal Walkway concept. Some of these access strips could also be added to the Long Bay Regional Park / Piripiri Reserve, protecting these provisions in perpetuity (either via 'vesting' with Council or via an alternative mechanism) and providing for ongoing public access. This would also align with the NZ Walking Access Commission's 'Opportunities' objective, and in particular two of the five directions for achieving more access opportunities over private land. These are "Actively seeking opportunities to improve and enhance existing walking access, including formalising arrangements where possible and negotiating for associated

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access use where appropriate", and "Developing new walking access where there is a need and where it will provide and contribute to future access opportunities" (NZ Walking Access Commission National Strategy 2010-2015, page 18). A letter from the NZ Walking Access Commission is attached in Appendix C. It indicates which of their priorities for walking access would be addressed by the potential access gains from the proposed development provisions. Achieving such enhanced access would also align with related objectives and policy provisions in the New Zealand Coastal Policy Statement (2010), particularly those included in Objective 4 and Policies 6,18 and 19 (refer Appendix D).

(b) Facilitating fulfilment of one of the Greenways specific 'priority projects' in the Hibiscus and Bays Local Board area (from Long Bay to Okura), identified as the "Long Bay and 'Crimson Walkway' paths" in the Hibiscus and Bay Greenways: Local Paths Plan (2016).

(c) Providing new recreational access options off the already consented road (an extension of Vaughans Road) and any new roads or urban green-spaces/corridors/greenway paths arising from the proposal that border Long Bay Regional Park / Piripiri Reserve.

(d) Providing access through a proposed network of publicly accessible and restored stream gully catchment corridors which would effectively be recreationally and ecologically linked with Long Bay Regional Park / Piripiri Reserve. These would provide a number of direct new access links from the Park to Okura Estuary.

(e) Providing more options for trail connections as advocated under the Hibiscus and Bays Local Board's Hibiscus and Bay Greenways: Local Paths Plan (2016), which aims to provide a connected recreational network, allowing residents to move safely through and between their existing open spaces.

[709] In addition to Mr Jones' views on the access benefits, the OHL case on walkway/access was supported by the evidence of Mr D McGregor, who is the Chairperson of the Te Araroa Trust. He advised that the Trust was settled to advance Te Araroa (the Long Pathway) as a 3000 km National walkway extending the full length of New Zealand.

[710] Mr McGregor advised that at Okura the connection between the Hibiscus Coast walk on the northside of the Estuary and the Akarana (North Shore) coastal walk on the southside is across the Estuary at low tide. He said that accounts vary as to the depth of the crossing which is somewhere between hip and chest height, requiring packs to be carried above water level. Mr McGregor expressed concerns

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as to the obvious risk in this process. Additionally, we observe that this clearly rules out this part of the walk for casual walkers, family groups and the less determined.

[711] Mr McGregor advised that the Trust supported the introduction of the Okura Structure Plan as it represented a potential for a walking link between the Hibiscus Coast and the North Shore. He was of the opinion that provision of walking access along the Estuary edge of the OHL land would be of enormous benefit to the Trust and that even if it did not complete the walkway (due to there being other intervening land) it would provide an impetus to do so.

[712] The expert witnesses on open space agreed at their witness conference that the OHL proposal would guarantee the provision of an esplanade strip or reserve adjoining the Estuary, which would enable the formation of a walkway in this area. There is no guarantee (and indeed it seems highly unlikely) that such a walkway would be established under the existing zoning. However, the Council disputed Mr Jones' views as to the extent of the benefits which would emerge from the OHL proposal.

[713] The Council's position on the supposed benefit of the coastal walkway was that "the walkway benefit is overstated. In reality, the coastal walkway goes nowhere".[432] The Council's submission was based upon Mr Barwell's evidence for the Council that although at its eastern end the proposed walkway through the OHL land would connect to the walkway in the Regional Park, at its western extremity the extent of any walkway must stop at Pyes Creek which forms or is close to the western boundary of the OHL land. There is no connection across Pyes Creek to the Okura township on the other side, nor is there any explanation as to how walkers would get from the OHL land to the township. Mr Barwell said that there had been no assessment undertaken or even consideration given as to whether it was environmentally, financially or practically feasible.[433]

[714] Mr Barwell agreed with the Council's submission on the basis that he had seen no evidence of the walkway going anywhere other than the western extremity of the OHL land. He accepted the proposition put to him by Ms Simons that if access were available to Pyes Creek, then the future opportunity of connecting it to the Te Araroa trail would not be shut down. That opportunity would be enabled even if it was never

[432] Council submission at para 15.7.
[433] Barwell Rebuttal at [5].

realised.[434]

[715] We consider that there are potentially some benefits which arise from the OHL walkway proposal. Connection of the eastern end of the OHL walkway to the western end of the Regional Park walkway enables the extension of that latter by approximately 2 kms. That seems to us to be a benefit which is consistent with the provisions of s 6(d) RMA. However, that benefit must be tempered by the potential for coastal access to lead to disturbance of bird life. We refer to our comments in that regard in our discussion on that matter.

[716] We consider that any benefits which might emerge from connection of the wider walkway system to the OHL land and in particular connection to Te Araroa are limited in extent. We think that the Council is correct in its submission that the OHL walkway is in reality a walkway to "nowhere" at its western end. Put in the most favourable terms to OHL, the walkway must stop at Pyes Creek and we were not given any information as to the feasibility of what might be required to bridge that creek and whether or not there is any potential for that to happen. We understand that in order to carry on around to connect into the Okura Bush Walkway and then Te Araroa, there would need to be a further river crossing constructed and possibly other private land acquired.

[717] We accept that it would be possible for any walkway to loop back up through the western end of OHL's land to Vaughans Road, thereby providing some possible connection to that road and the Long Bay development, however that was not the primary benefit contended by OHL whose emphasis was on the potential Te Araroa connection.

[718] We consider that OHL has substantially *overweighted* the contended walkway benefits of establishment of the walkway along the Estuary edge of its land, especially in the immediate future.

*Open Space and Recreation: Assessment and Findings against Relevant Objectives and Policies*

[719] We now assess OHL's proposals against relevant aspects of the Unitary

[434] NOE at page 143.

Plan's policy framework commencing with the RPS provisions for open space and recreation facilities in B2 Urban growth and form section. As there is a degree of duplication between the B2 and B8 Coastal environment policies for public access to the coast we deal with them together. Section B2 of the Unitary plan has the following relevant provisions:

B2.7 Open space and recreation facilities

B2.7.1 Objectives

(1) Recreational needs of people and communities are met through the provision of a range of quality open spaces and recreation facilities.

(2) Public access to and along Auckland's coastline, coastal marine area ... rivers, is maintained and enhanced.

B2.7.2. Policies

(1) Enable the development and use of a wide range of open spaces and recreation facilities to provide a variety of activities, experiences and functions.

(2) Promote the physical connection of open spaces to enable people and wildlife to move around efficiently and safely.

(3) Provide a range of open spaces and recreation facilities in locations that are accessible to people and communities.

(4) Provide open spaces and recreation facilities in areas where there is an existing or anticipated deficiency.

(5) Enable the development and use of existing and new major recreation facilities.

(6) Encourage major recreation facilities in locations that are convenient and accessible to people and communities by a range of transportation modes.

(7) Avoid, remedy or mitigate significant adverse effects of land use or development on open spaces and recreation facilities.

(8) Avoid, remedy or mitigate significant adverse effects from the use of open spaces and recreational facilities on nearby residents and communities.

(9) Enable public access to lakes, rivers, streams, wetlands and the coastal marine area by enabling public facilities and by seeking agreements with private landowners where appropriate.

(10) Limit public access to and along the coastal marine area, lakes, rivers, streams and wetlands by esplanade reserves, esplanade strips or other legal mechanisms where necessary for health, safety or security reasons or to protect significant natural or physical resources.

[720] RPS section B8 relating to the coastal environment has the following relevant provisions:

B8.4. Public access and open space

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B8.4.1. Objectives

(1) Public access to and along the coastal marine area is maintained and enhanced, except where it is appropriate to restrict that access, in a manner that is sensitive to the use and values of an area.

(2) Public access is restricted only where necessary to ensure health or safety, for security reasons, for the efficient and safe operation of activities, or to protect the value of areas that are sensitive to disturbance.

(3) The open space, recreation and amenity values of the coastal environment are maintained or enhanced, including through the provision of public facilities in appropriate locations.

B8.4.2. Policies

(1) Subdivision, use and development in the coastal environment must, where practicable, do all of the following:
   (a) maintain and where possible enhance public access to and along the coastal marine area, including through the provision of esplanade reserves and strips;
   (b) be designed and located to minimise impacts on public use of and access to and along the coastal marine area;
   (c) be set back from the coastal marine area to protect public open space values and access; and
   (d) take into account the likely impact of coastal processes and climate change, and be set back sufficiently to not compromise the ability of future generations to have access to and along the coast.

(2) Provide for a range of open space and recreational use of the coastal environment by doing all of the following:
   (a) identifying areas for recreational use, including land-based facilities for those uses, where this ensures the efficient use of the coastal environment;
   (b) enabling the provision of facilities in appropriate locations that enhance public access and amenity values;
   (c) enabling Māori cultural activities and customary use; and
   (d) managing uses to avoid conflicts and mitigate risks.

(3) Restrict public access to and along the coastal marine area, particularly walking access, only where it is necessary to do any of the following:
   (a) protect public health and safety;
   (b) provide for defence, port or airport purposes;
   (c) protect areas with natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character;
   (d) protect threatened indigenous species;

(e) protect dunes, estuaries and other sensitive natural areas or habitats;

*Comment*

[721] The open space that OHL proposes is generous in spatial terms and potentially capable of satisfying Objective B2.7.1(1). Built development in accordance with the Precinct structure plan would be set back sufficiently to implement Policy B8.4.2(1)(b) and (c). Leaving its coastal access function to one side, the proposed Open Space- Conservation zone has - subject to appropriate master planning - sufficient depth to accommodate a number of functions (passive recreation, amenity and protection of archaeological sites) along its two kilometre coastal length. While the details before us were scant it is accepted that more specific open space proposals are potentially capable of being shaped and refined through subsequent resource consent processes.

[722] The same can be said for the management of the areas zoned Open Space – Informal Recreation which in addition to the riparian planting required, are potentially capable of providing a range of recreation facilities for a variety of activities, experiences and functions of the type described by Mr Jones and Mr Barwell (Policy B2.7.2(1)). The proposed precinct plan allows for physical connections within the development and to the FUZ land, Regional Park and adjoining Long Bay development (Policy B2.7.2(2)). It would certainly enable the use of existing major recreation facilities both north and south of the Estuary (Policy B2.7.2(5)) and be accessible by private and (potentially) public transport (Policy B2.7.2(6)).

[723] The proposal would not avoid, remedy or mitigate significant adverse effects of land use or development on the open space and recreation facilities afforded by the Regional Park; especially where the north-eastern development cell abuts the Park with no screening or similar mitigation proffered (Policy B2.7.2(7)).

[724] The opportunity that Precinct Policy I527.3(6) creates for the proposed open space to remain in private ownership has a degree of support in Policy B2.7.2(9) which allows for public access to streams and the coast by "agreements with private landowners where appropriate". However, we are not confident that B2.7.2(9) is intended to enable 55 ha of open space potentially managed for multiple public and private purposes (including important stream maintenance functions) to remain in the private ownership of an unspecified entity representative of 1,000 plus households.

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Nor are we confident that such would prove practicable, successful or enduring.

[725] Objectives and policies in the RPS Coastal environment section support public access to and along the coastal marine area which the proposal would implement (Objective B2.7.1(2), Policy B2.7.2((9), Objective B8.4.1(1), Policy B8.4.2(1)(a)). However, Policy B2.7.2(10) is to limit public access where necessary to protect significant natural resources. Similarly, Objectives B8.4.1(1) and (2) are qualified by restricting access "in a manner that is sensitive to the use and values of an area" and where it is necessary to "to protect the value of areas that are sensitive to disturbance". This approach is maintained in Policy B8.4.2(3) which is to restrict access, particularly walking access, where it is necessary to protect areas with, amongst other things, natural resources scheduled in the Unitary Plan; threatened indigenous species; and sensitive natural areas or habitats. We have found that it is more probable than not that OHL residents and their pets, and others attracted to the coastal environment for recreational purposes, would have a non-transitory and more than minor adverse effect on the avifauna resources of the Estuary and adjacent southern shore.

[726] Absent specific management measures in the proposed Precinct Provisions we find that Okura is a location where, to protect significant natural resources, it is better that public walking access to and along the coastal marine area is limited (Policy B2.7.2(10)). The most certain method of securing this is to not enhance public access along the OHL coastal edge.

**Statutory Regime**

[727] In this section of our decision we consider the statutory regime under the following heads:

- *Section 32 RMA including consideration of provisions of the Unitary Plan relating to Urban growth and form*;
- *Section 290A RMA;*
- *Relevant provisions of Part 2 RMA.*

*Section 32 RMA including consideration of provisions of the Unitary Plan relating to Urban growth and form*

[728] Clause 5(1)(a) of Schedule 1 RMA requires a local authority which has prepared a proposed policy statement or plan to "prepare an evaluation report for the

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proposed policy statement or plan in accordance with s 32 and have particular regard to that report when deciding whether to proceed with the statement or plan". This obligation applied to the Council when preparing the Unitary Plan pursuant to LGATPA.[435] Both the Council and the Court are obliged to undertake a similar evaluation as part of their determination of the policy statement or plan proposal.

[729] Section 32[436] relevantly provides as follows:

> **32 Requirements for preparing and publishing evaluation reports**
>
> (1) An evaluation report required under this Act must –
>
> (a) examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act: and
>
> (b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by –
>
> (i) identifying other reasonably practicable options for achieving the objectives; and
>
> (ii) assessing the efficiency and effectiveness of the provisions in achieving the objectives; and
>
> (iii) summarising the reasons for deciding on the provisions; and
>
> (c) contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.
>
> (2) An assessment under subsection (1)(b)(ii) must –
>
> (a) identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for –
>
> (i) economic growth that are anticipated to be provided or reduced; and
>
> (ii) employment that are anticipated to be provided or reduced; and
>
> (b) if practicable, quantify the benefits and costs referred to in paragraph (a); and
>
> (c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.
>
> (6) In this section, -
>
> **objectives** means, -

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435 Section 123(2) LGATPA.

436 This version of s 32 came into force as from 4 September 2013 for the purposes of preparation of the Unitary Plan.

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(a) for a proposal that contains or states objectives, those objectives:
(b) for all other proposals, the purpose of the proposal

**proposal** means a proposed standard, statement, regulation, plan, or change for which an evaluation report must be prepared under this Act

**provisions** means, -
(a) for a proposed plan or change, the policies, rules, or other methods that implement, or give effect to, the objectives of the proposed plan or change:
(b) for all other proposals, the policies or provisions of the proposal that implement, or give effect to, the objectives of the proposal.

The proposal to be evaluated in this instance is the Unitary Plan, more particularly, those provisions of the Unitary Plan relating to the location of the RUB in the vicinity of Long Bay and the Estuary.

[730] There was no suggestion made in these proceedings that the objectives contained in the Unitary Plan are not the most appropriate way to achieve the purpose of the Act (s 32(1)(a)). The issue before the Court is whether the most appropriate way of achieving those objectives (s 32(1)(b)) is the Council's option of locating the RUB at Vaughans Road or OHL's option of moving the RUB northward towards the Estuary. In determining that issue we will identify the relevant objectives of the Unitary Plan and the policies which seek to give effect to those objectives contained in Chapter B2 relating to "Urban growth and form". Chapter B2 is part of the regional policy statement component of the Unitary Plan. For the sake of completeness we record that Chapter G1 of the Unitary Plan (part of the district plan component) requires that ... "Any relocation of the Rural Urban Boundary must give effect to the objectives and policies of the regional policy statement which establish it."

[731] Obviously in determining the question of where the RUB should be it is necessary to consider the details of the current and proposed zones together with current zoning provisions and the Precinct Provisions. Depending on the conclusion which we reach on that question it may be necessary to have regard to the provisions of ss75 and 76 in determining the question of appropriate Precinct Provisions.

[732] Chapter B of the Unitary Plan (inter alia) identifies "Issues of Regional

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Significance" which include "Urban growth and form".[437] Chapter B2.1 identifies the issues which arise under this head. It provides as follows:

> Chapter B2.1 Issues
>
> Auckland's growing population increases demand for housing, employment, business, infrastructure, social facilities and services.
>
> Growth needs to be provided for in a way that does all the following:
>
> (1) enhances the quality of life for individuals and communities;
> (2) supports integrated planning of land use, infrastructure and development;
> (3) optimises the efficient use of the existing urban area;
> (4) encourages the efficient use of existing social facilities and provides for new social facilities;
> (5) enables provision and use of infrastructure in a way that is efficient, effective and timely;
> (6) maintains and enhances the quality of the environment, both natural and built;
> (7) maintains opportunities for rural production; and
> (8) enables Mana Whenua to participate and their culture and values to be recognised and provided for.

[733] Chapter B2.1 records that Auckland's growing population increases demand for housing etc and provides that growth needs to be provided for in a way which does "all" (our emphasis) of the various things set out in paras (1)-(8). These provisions require (inter alia) that growth maintains and enhances the quality of the environment, both natural and built.

[734] Chapter B2.2 contains the Council's objectives and policies for dealing with the issues set out above. It contains the following relevant objectives:

> B2.2.1. Objectives
>
> (1) A quality compact urban form that enables all of the following:
>
> (a) a higher-quality urban environment;
> (b) greater productivity and economic growth;
> (c) better use of existing infrastructure and efficient provision of new infrastructure;
> (d) improved and more effective public transport;
> (e) greater social and cultural vitality;
> (f) better maintenance of rural character and rural productivity; and
> (g) reduced adverse environmental effects.

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[437] Chapter B1.4(1).

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(2) Urban growth is primarily accommodated within the urban area 2016 (as identified in Appendix 1A).
(3) Sufficient development capacity and land supply is provided to accommodate residential, commercial, industrial growth and social facilities to support growth.
(4) Urbanisation is contained within the Rural Urban Boundary, towns, and rural and coastal towns and villages.
(5) The development of land within the Rural Urban Boundary, towns, and rural and coastal towns and villages is integrated with the provision of appropriate infrastructure.

[735] The objectives address a number of matters relevant to our considerations. They seek a quality compact urban form that enables "all" (again) of the matters set out in Objective 1(a)-(g). We understand this to require that all of the matters identified are to be achieved when providing for urban growth, including reduced adverse environmental effects. Although the OHL land is outside of the urban area identified in 2016, OHL seeks to bring its land inside the RUB to comply with Objectives (4) and (5). The objective seeks to have capacity to accommodate residential (inter alia) growth.

[736] The policies intended to give effect to these objectives are found in Chapter B2.2.2 which relevantly provides:

B2.2.2. Policies

*Development capacity and supply of land for urban development*

(1) Include sufficient land within the Rural Urban Boundary that is appropriately zoned to accommodate at any one time a minimum of seven years' projected growth in terms of residential, commercial and industrial demand and corresponding requirements for social facilities, after allowing for any constraints on subdivision, use and development of land.
(2) Ensure the location or any relocation of the Rural Urban Boundary identifies land suitable for urbanisation in locations that:
  (a) promote the achievement of a quality compact urban form
  (b) enable the efficient supply of land for residential, commercial and industrial activities and social facilities;
(c) integrate land use and transport supporting a range of transport modes;
(d) support the efficient provision of infrastructure;
(e) provide choices that meet the needs of people and communities for a range of housing types and working environments; and
(f) follow the structure plan guidelines as set out in Appendix 1;
while:

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(g) protecting natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character;

...

(i) ensuring that significant adverse effects from urban development on receiving waters in relation to natural resource and Mana Whenua values are avoided, remedied or mitigated;

...

(m) aligning the Rural Urban Boundary with:

(i) strong natural boundaries such as the coastal edge, rivers, natural catchments or watersheds, and prominent ridgelines; or

(ii) where strong natural boundaries are not present, then other natural elements such as streams, wetlands, identified outstanding natural landscapes or features or significant ecological areas, or human elements such as property boundaries, open space, road or rail boundaries, electricity transmission corridors or airport flight paths.

[737] Policy B2.2.2 (1) addresses the issue which we have previously discussed in the Economics section of this decision. Including the OHL land within the RUB would obviously accord with the Policy. Conversely, we refer to the findings which we have previously made that it is not necessary to include the OHL land (or FUZ land) within the RUB to meet this Policy (or Objective B2.2.1(3)) as there is sufficient land appropriately zoned to achieve this outcome without the OHL (and FUZ) land.

[738] Policy B2.2.2(2) is directly pertinent to our considerations in this case. We consider that there are two words in the Policy which are of particular significance, namely "Ensure" and "while". We understand the word ensure in this context to mean "make sure" or "make certain the occurrence of an outcome".[438] We understand the word while in this context to mean "so long as, provided that".[439] We interpret Policy B2.2.2(2) to mean that in fixing the location or relocation of the RUB, we are to make certain that the various outcomes sought in Policy (2)(a)-(f) are achieved so long as (in all cases) the outcomes sought in Policy (2)(g)-(m) are also achieved.

[739] It appears to us that the OHL proposal largely achieves the outcomes sought in Policy (2)(a)-(f) (subject to some uncertainty as to the capacity of the transport system to meet the requirements of the number of houses at the potential upper end

438 The New Shorter Oxford English Dictionary (1993).
439 The New Shorter Oxford English Dictionary (1993).

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of development capacity). However, we are unable to make a similar finding as to the outcomes sought in Policies (2)(g) and 2(i) which we are also required to ensure are achieved.

[740] We refer to the detailed discussion which we have had as to effects of the proposed OHL development on the natural character and landscape values of OHL land and the wider Okura environment. We have found that the OHL proposal not only fails to protect natural and physical resources which have been scheduled in the Unitary Plan but rather has high adverse effects on a number of those scheduled resources. There remain uncertainties as to the extent of adverse effects which might be visited upon the receiving waters of the Estuary from urbanisation of the OHL land and whether the proposal adequately avoids, remedies or mitigates significant adverse effects on those waters. We refer to our findings as to the likely adverse effects of the OHL proposal on avifauna. We find that the OHL proposal is directly contrary to Policy 2(g) in that it fails to protect the resources in question. We are uncertain as to whether or not it achieves the outcomes sought in Policy 2(i).

[741] There was considerable debate about Policy 2(m), which is phrased in the alternative. It appears to us that the OHL proposal accords with Policy 2(m)(i) to the extent that it extends the RUB to the Estuary itself. Obviously in that case the coastal edge provides a strong natural boundary. There was some debate about the western boundary of the RUB, where the boundary was (largely) down a minor ridgeline. However, we note that Policy 2(m)(ii) contemplates that property boundaries might be an adequate alignment for the RUB. Ultimately, we do not consider that the outcome of the proceedings revolves around that issue.

[742] We find that the OHL proposal not only fails to make certain that location of the RUB at Okura achieves all of the outcomes envisaged by Policy B2.2.2, but further that it adversely affects natural and physical resources which the Unitary Plan identifies to a high or significant degree. The Council's proposal to have the RUB stop along Vaughans Road appears consistent with both the Objective and the Policy.

[743] The next matter which we have considered arises under Objective B2.3.1 which relevantly provides:

> B2.3. A quality built environment
>
> B2.3.1. Objectives
>
> (1) A quality built environment where subdivision, use and development do all of the

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following:

(a) respond to the intrinsic qualities and physical characteristics of the site and area, including its setting;

[744] We refer in this regard to the various findings which we have made as to the adverse effects of the OHL proposal on both the OHL land itself and the wider environment of the Estuary.

[745] Insofar as the OHL land itself is concerned, the proposal largely fails to respond to the intrinsic qualities and physical characteristics of the site. Rather, it sets out to reshape those intrinsic qualities and physical characteristics to accommodate the urban development which it proposes. We find that the OHL proposal has not been driven by the qualities and characteristics of the Site, but rather by OHL's development requirements.

[746] Insofar as the wider area and its setting is concerned, we refer to the various findings which we have made as to the adverse effects of the OHL proposal on that environment. We consider that OHL has failed to identify and respond to the intrinsic qualities and physical characteristics of the area for the reasons which we discussed in some detail in our discussion of natural character and landscape issues. We consider that the values of the Estuary as an avifauna habitat form also form part of the intrinsic and physical qualities of the area and that the OHL proposal fails to respond to those qualities.

[747] We find that the OHL proposal is directly contrary to Objective B2.3.1.

[748] We consider that the Council's preferred CLZ option accords with the Objective. The infrastructural development necessary to give effect to the zoning has been completed and largely follows the lay of the land. Because of its much lower density it does not require the reshaping of land necessary for the OHL proposal, nor does it adversely impact on the qualities and characteristics of the surrounding area (many of which are scheduled for protection in the Unitary Plan) to the extent that the OHL proposal does.

[749] Policy B2.3.2 seeks to give effect to Objective B2.3.1. It relevantly provides:

B2.3.2. Policies

(1) Manage the form and design of subdivision, use and development so that it does

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all of the following:

(a) supports the planned future environment, including its shape, landform, outlook, location and relationship to its surroundings, including landscape and heritage;

(2) Encourage subdivision, use and development to be designed to promote the health, safety and well-being of people and communities by all of the following:

(c) minimising the adverse effects of discharges of contaminants from land use activities (including transport effects) and subdivision.

[750] We consider that there is a "planned future environment" at Okura. That is because the Estuary and its surrounding lands and waters have been identified in the Unitary Plan as ONLs, HNC areas and SEAs. All of these areas are subject to specific provisions in the Unitary Plan seeking their protection and preservation into the future. The OHL proposal fails to support that planned future environment by protecting it, but rather adversely affects the relationship of the OHL land to its surroundings due to the acknowledged "knock-on" effect which development on the land has on the adjacent ONLs and HNC areas and the likely adverse effects on the physical resources (avifauna) which the SEAs recognize. We consider that the OHL proposal is directly contrary to this Policy.

[751] We consider that there remain uncertainties as to the extent to which the OHL proposal minimises the adverse effects of discharges of contaminants, which arises as a result of development and subsequent urbanisation of the land.

[752] CLZ zoning appears to be in accord with this Policy. Development has been undertaken with minimal disturbance to the underlying shape and landform of the OHL land. Although CLZ development will undoubtedly change the backdrop landscape of the Estuary, that landscape will retain its existing landform and a degree of rural character. CLZ development may have some adverse effect on avifauna CLZ by the introduction of further human activity onto the Site, that will be at a considerably less intensive level than proposed by OHL. We consider that CLZ development will support the ONLs, HNC areas and SEAs to a much greater degree than the OHL proposal.

[753] Chapter B2.4 of the Unitary Plan relates to Residential growth. Objective B2.4.1 is that:

B2.4.1 Objectives 9(1)

Residential intensification supports the quality compact urban form.

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We make no further comment on this Objective itself, but observe that the policies give some indication as to what is sought in the way of a quality compact urban form.

[754] The policies relevantly contain the following provisions:

> B2.4. Residential growth
>
> B2.4.2. Policies
>
> *Residential intensification*
>
> (4) Provide for lower residential intensity in areas:
>
> (c) Where there are natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character;
>
> (5) Avoid intensification in areas:
>
> (a) where there are natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage or special character;
>
> where such intensification is inconsistent with the protection of the scheduled natural or physical resource ...

[755] These policies are clearly relevant to our considerations in light of the comparison between CLZ development and OHL's proposed development. Policy B2.4.2(4)(c) contemplates that lower residential intensity is appropriate in areas where there are natural and physical resources which have been scheduled for the identified purposes, as there are in this area. The CLZ zoning is consistent with that Policy. We consider that there is a consistency between the Policy and the determination of the Court in its 2003 decision to impose a minimum 4 ha requirement on subdivision in this part of the Okura catchment as being "consonant with the special nature and character of the area".[440] We note that the Court's findings as to that special nature and character are consistent with the ONL, HNC and SEA identifications that are now contained in the Unitary Plan. We refer to our earlier finding that in terms of effects on natural character and landscape values, development in accordance with CLZ zoning is a more appropriate use of the OHL land than urban development as proposed by OHL. In light of that finding, retention of the current zoning over the OHL land accords with the Policy.

[756] Conversely, we find that the OHL proposal is directly contrary to Policy (5)(a)

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[440] Para [593] (above).

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as it leads to outcomes which are inconsistent with protection of the resources which have been scheduled in the Unitary Plan.

*Overall finding on Urban growth and form*

[757] Looked at *in the round* we consider that the OHL proposal finds little support in the objectives and policies pertaining to Urban growth and form which we have identified. It fails to give effect to a number of the relevant objectives and policies. Significantly, it is directly contrary to Policy B2.2.2(g) whose outcomes the Unitary Plan seeks to ensure are achieved when the location of the RUB is fixed. It is also contrary to a number of other objectives or policies which we have identified. By comparison, the Council's CLZ proposal accords with at least some of the identified objectives and policies and at the worst is not contrary to them to the extent that the OHL proposal is. We find that of the options before the Court, the CLZ status quo is the most appropriate way to achieve the objectives of the Unitary Plan.

*Section 290A RMA*

[758] Section 290A provides as follows:

> **290A Environment Court to have regard to decision that is subject of appeal or inquiry**
>
> In determining an appeal or inquiry, the Environment Court must have regard to the decision that is the subject of the appeal or inquiry.

[759] The decision which is subject to this appeal is the Council's decision to reject the IHP's recommendation supporting the OHL proposal. Section 290A imposes an obligation on the Court to have regard to that decision in determining this appeal. We have had regard to both the Council decision and the IHP recommendation which preceded it.

[760] The IHP agreed with OHL that it was appropriate to relocate the RUB and impose live zonings over the 130ha OHL land, allowing the development which we have described. The IHP decision recorded that the "primary reason" for its recommendation was that the structure planning undertaken and evidence in support of the OHL proposal were comprehensive and consistent with the approach contemplated by the RPS. The IHP recommendation recorded that the most contentious issue before it was the extent of adverse effects on the biodiversity of the Estuary and functioning of the marine reserve.

[761] The Council gave five reasons for rejecting the IHP's recommendation. Rather than setting them out in full in this decision we record that they were accurately summarized in para 2.3 (a) – (e) of Ms Simons' submissions for OHL. She noted that the Council's decision was contrary to the advice of its officers and contended "that the decision was political rather than a merits based consideration, taking account of the evidence and the applicable law."[441]

[762] We mean no disrespect to either the IHP or the Council when we say that neither the IHP recommendation nor the Council decision were of assistance to the Court in determining this appeal. The recommendation and decision were both comparatively brief documents (the Council decision particularly so) and reflect the somewhat summary nature of the process involved in hearings for the Unitary Plan. Neither the IHP nor the Council had the benefit of the detailed hearing process undertaken in this Court. A surprising aspect of both the recommendation and decision was the lack of reference to the natural character and landscape issues and effects of the OHL development on ONLs, HNC areas and SEAs which were a very significant component of the hearing which we undertook and are central to the decision which we have reached.

*Relevant Provisions of Part 2 RMA*

[763] While we accept that the requirements of Part 2 will have been encapsulated in the relevant higher order planning documents to which we have had regard, we consider that it is nevertheless necessary and appropriate to consider those requirements on a discrete basis, even on a *belt and braces* approach if nothing else.

[764] Section 5(1) RMA requires us to promote sustainable management of natural and physical resources in determining this appeal. Those resources include the OHL land as well as the Estuary and wider surrounding environment. Section 5(2) defines sustainable management in these terms:

> **5 Purpose**
>
> (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—

[441] OHL Submission at [2.4].

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(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.

[765] Section 5(2) provides for both the use and development of natural and physical resources as well as their protection. In this instance the OHL and CLZ proposals both seek to advance the social, economic and cultural wellbeing of the Auckland community and the health and safety of that community by providing housing capacity at different intensities at Okura. The Unitary Plan recognizes the need for such housing to be provided in a quality built environment.

[766] We consider that the OHL proposal fails to sustain the potential of the Estuary to provide for the reasonably foreseeable needs of future generations of Aucklanders to have access to an estuary in natural condition. We understand the Estuary to be the last estuary on the east cost of the city which is largely free of development. It is the only Estuary possessing all of the various features we have identified. It is an estuary which the Unitary Plan seeks to protect through its identification as an ONL, HNC area (in part) and SEA. Urbanisation at the intensity sought by ONL will substantially diminish the features giving rise to those identifications and hence will not sustain the potential of the Estuary to meet the needs of future generations.

[767] We remain uncertain as to the extent to which the OHL proposal will safeguard the life supporting capacity of air, water, soil and ecosystems. We consider that there is an inevietability of disruption to bird life for which the Estuary is a recognised habitat if the OHL proposal goes ahead.

[768] We consider that the OHL proposal fails to adequately avoid, remedy or mitigate adverse effects on the natural character, landscape values and avifauna of the Estuary and other parts of the surrounding environment.

[769] We recognize that development in accordance with CLZ rules also has potential to adversely impact of a number of the matters identified in s 5(2)(a) – (c), however such development does not require the significant changes to the natural

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landform of the OHL land which the OHL proposal does and retains the rural backdrop which supports the natural character of the Estuary. The adverse effects arising from a CLZ development are less severe than those arising from the OHL proposal by many degrees of magnitude.

[770] Section 6 RMA identifies a number of matters of national importance which we are to recognize and provide for in making our decision. It provides as follows:

> **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.
>
> (f) the protection of historic heritage from inappropriate subdivision, use, and development.
>
> (g) the protection of protected customary rights.

[771] We have found that the OHL proposal fails to preserve the natural character of the coastal environment or protect that environment from "inappropriate subdivision, use and development".[442]

[772] We have found that rather than protecting outstanding natural landscapes, the ONL proposal has high adverse effects on such landscapes and is "inappropriate".[443]

[773] We are not satisfied that the OHL proposal will protect significant habitats of bird life in the Estuary but rather is likely to adversely affect such habitats.[444]

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[442] Para [670] (above).
[443] Para [670] (above).
[444] Para [396] (above).

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[774] We have found there may be some benefit from the extension of walking access around the edge of the Estuary as proposed by OHL but that benefit is limited in extent due to the lack of connectivity at the western (Okura village) end of the proposed access.[445]

[775] Section 7 RMA identifies a number of matters to which we are to have regard in making our decision. It relevantly provides:

> **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:
>
> (ba) the efficiency of the end use of energy:
>
> (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:
>
> (i) the effects of climate change:
>
> (j) the benefits to be derived from the use and development of renewable energy.

[776] Arguably, the OHL proposal makes a more efficient use of the OHL land than the Council's CLZ proposal because of the considerably more intensive residential activity which it will enable on the land. However, that more intensive use is obtained at the expense of considerable diminution of a range of other values and features which s 6, other provisions of s 7 and the Unitary Plan seek to protect, recognize, provide for or have particular regard to.

[777] Our earlier findings lead us to the conclusion that the OHL proposal fails to maintain and enhance values or the quality of the environment. In fact, it adversely affects both, in some instances significantly so.

445 Para [714] (above).

[778] We consider that the characteristics of the Estuary which we have identified previously in this decision are finite. It is the last estuary on the east coast of Auckland's north shore remaining in a substantially undeveloped condition. It is the only estuary where all of the features, recognitions and protections we have identified may be found. In its 1996 decision the Court recognised the need to protect the Estuary for the enjoyment of future generations. We consider that the factors which led the Court to that conclusion in 2006 exist today, indeed more so.

**Conclusions**

[779] In the preceding sections of this decision, we have reached various conclusions about the issues which we have identified. We summarise those conclusions in the following brief terms:

- We have accepted the adequacy of the GLEAMS model for understanding sediment yields and effects and have found that provided strengthened Precinct Provisions are in place, the OHL land can be developed in the form proposed by OHL from an earthworks perspective and in a manner consistent with relevant objectives and policies. We have recognised some degree of uncertainty, particularly having regard to climate change but have accepted to the extent possible that factor is counterbalanced by the conservative basis on which the modelling was undertaken. We have found that sediment from the OHL land would be only a small contributor to sediment entering the Estuary in major climatic events and that after completion of the earthworks, the OHL land will discharge less sediment than at present;
- We have assessed the extent of stream modifications proposed by OHL and have identified the need to address some issues regarding those proposals in the Precinct Provisions. We have expressed a concern as to the body which would be responsible for ongoing maintenance of the realigned stream system from OHL as failure to properly maintain the stream system could ultimately lead to the discharge of sediment into the Estuary;
- We have considered the potential impact of heavy metal contaminants from the developed OHL land entering into the Estuary, in light of the modelling undertaken by OHL. We have found that metal contaminants would not exceed guideline levels.
- We have addressed the issue of potential effects of metal contamination

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on marine ecology in that particular section of our decision. We have expressed a degree of uncertainty as to the cumulative effects of sediment, heavy metal and other undefined stressors might impact on the complex ecological setting of the Estuary. We have taken note of the significance of the Estuary due to its Marine Reserve status and its recognition in the SEA provisions of the Unitary Plan. We have recognised the need to adopt a precautionary approach in our assessment of these effects;

- We have identified that the Estuary is an important habitat for avifauna in the Auckland and wider coastal environment. We have found that it is unlikely that there will be adverse effects on avifauna from contaminants from the OHL site, although there is a degree of uncertainty in that regard. We have found that it is inevitable that increased human activity in the vicinity of the Estuary arising from urbanisation of the OHL land will have significant adverse effects on birdlife in the Estuary;
- We have jointly considered Unitary Plan objectives and policies relevant to marine and avifauna resources. We have identified a number of strong policy directions regarding both of these resources in the Unitary Plan. We were not confident that the OHL proposal would protect marine ecology from adverse effects as required by the objectives and policies and have identified the need to take a precautionary approach in that regard. We have found that the OHL proposal does not protect avifauna (which includes Threatened and At-Risk species) in the Estuary as required by the objectives and policies;
- We identified the need for careful management of earthworks to avoid adverse effects on freshwater species and were not satisfied as to the adequacy of the Precinct Provisions to protect and enhance their habitat, nor the adequacy of proposed long-term maintenance measures. Although there is potential for the OHL proposal to lead to an improvement in freshwater quality, we are far from certain that will happen. We have concluded that it is questionable whether the OHL proposal is consistent with a number of the relevant objectives and policies in this regard;
- We have accepted that the OHL proposal can be satisfactorily serviced with water and wastewater and accords with the relevant objectives and policies in that regard;

- We have identified uncertainties as to the capacity for the OHL proposal to be adequately serviced by roading infrastructure depending on the ultimate size of development which is undertaken. We were concerned about the implications of *live zoning* and the efficiency of OHL's transport proposals in the absence of agreement with Auckland Transport on this issue. We are uncertain whether or not the relevant objectives and policies are met by OHL's transport proposals;
- We have accepted that the OHL proposal is a more efficient use of land at Okura than the Council's CLZ zoning in purely monetised economic terms. We have found that the economic benefits of the OHL development would be minimal in the wider scheme and that it is not necessary to include the OHL and FUZ land within the RUB to meet objective and policy requirements to provide for future urban growth;
- We have identified that the OHL proposal will have significant adverse effects on natural character and landscape values of the site and surrounding environment in a situation where the component parts of that statutory environment have been identified for protection under both the Unitary Plan and other statutory instruments.
- We have identified that in their assessment of effects of the OHL proposal on natural character and landscape values, OHL and its advisors failed to take a broad overview of the aggregated qualities of the Estuary and what we somewhat cautiously identified as the distinctive sense of place and special character qualities of the Estuary and its high vulnerability to potential adverse effects of urban development;
- We have found the OHL development to be "inappropriate" having regard to a number of the criteria we are obliged to take into account in our assessment. We have found that the OHL proposal is either directly contrary to or fails to give effect to a number of the relevant objectives and policies which we have identified;
- We have pointed to uncertainty in OHL's proposals for provision of open space and as to the benefits which might flow from those proposals. We have expressed concerns as to the adequacy of management proposals relating to open space and the ability of those management proposals to ensure ongoing maintenance and management of streams in the open spaces;
- We have considered the contended benefits of OHL's walkway

proposals and have found them to be "overweighted". We have recognised that some aspects of OHL's access proposals are supported by objectives and policies, but have also recognised the potential for those proposals to adversely effect on avifauna resources;

- We have undertaken an assessment of the proposal to extend the RUB as sought by OHL, having regard to s 32. We have found that the OHL proposal is directly contrary to a number of the objectives of the Unitary Plan and of the policies supporting those objectives. We have found that of the options before the Court, the Council's CLZ proposal is the most appropriate way to achieve the relevant objectives of the Unitary Plan;
- We have had regard to the decisions of both the Council and the IHP and have found them to be of little assistance to the Court in determining the appeals;
- We have had regard to the relevant provisions of Part 2 RMA. We have identified a number of ways in which the OHL proposal fails to meet the various provisions we have identified and is directly contrary to them in a number of respects.

[780] Having regard to all of those factors, we find that the answer the first question which we identified at the commencement of this decision is that the RUB should not be extended to incorporate the OHL and FUZ land. There is no need for us to answer the second question.

[781] Both appeals are dismissed accordingly.

**Costs**

[782] The Court's normal policy is not to reserve costs on plan appeals. In this instance, we leave the question of costs open. If any party considers it appropriate to make a costs application it should be made in accordance with the provisions of the Environment Court Practice Note 2014.

Dated at WELLINGTON on this 5th day of June 2018

For the Court:

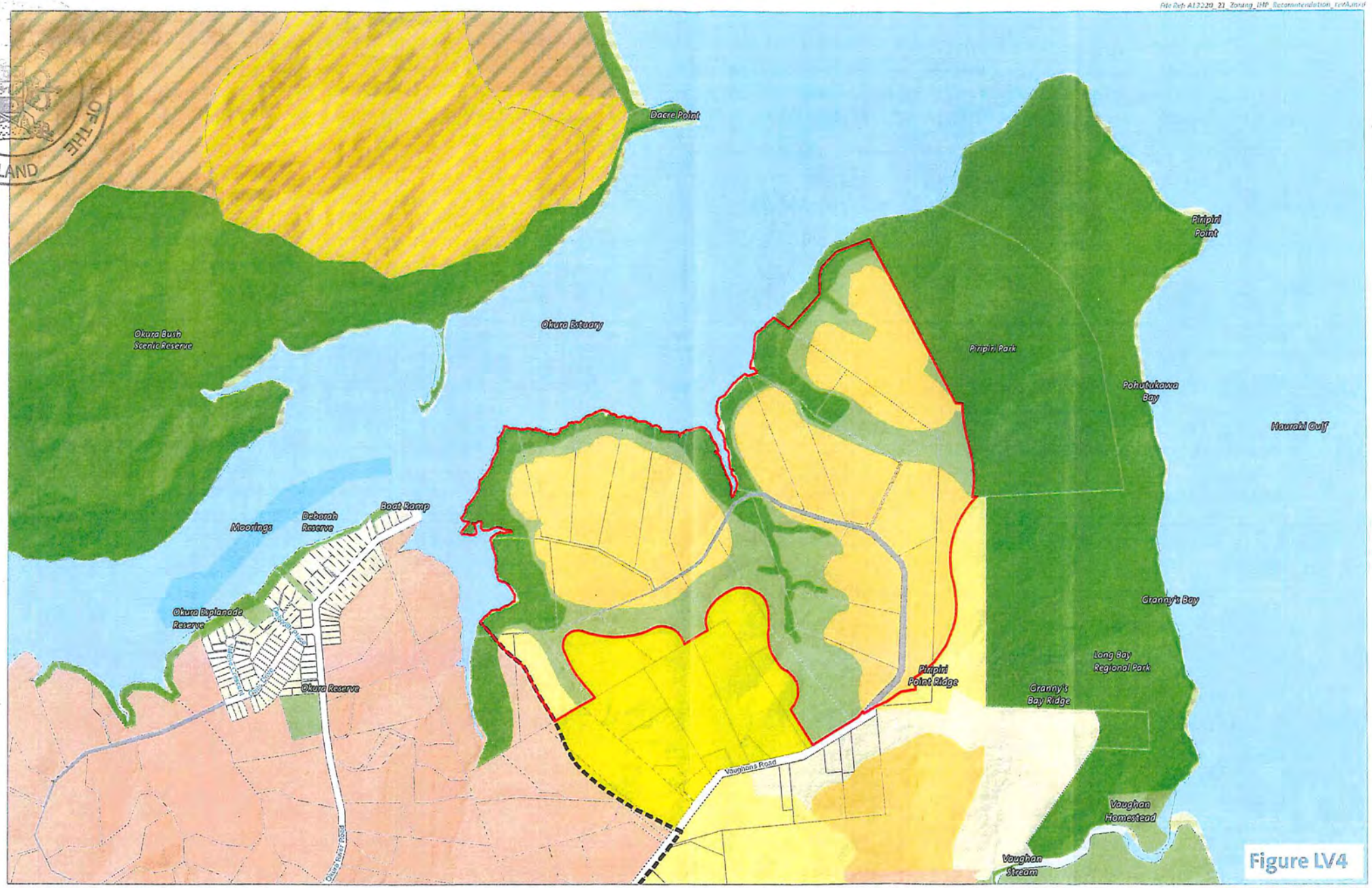
**B P Dwyer**
**Environment Judge**

**R M Dunlop**
**Environment Commissioner**

**D J Bunting**
**Environment Commissioner**

**R M Bartlett**
**Environment Commissioner**

File Ref: A13220_21_Zoning_IHP_Recommendation_revMarked

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Data Sources: LINZ (Cadastre), Auckland Council (IHP Recommendation Zoning), Woods, BML

Projection: NZGD 2000 New Zealand Transverse Mercator

Legend

- Okura Precinct - PAUP Recommendation Version
- Rural Urban Boundary
- Single House
- Mixed Housing Urban
- Mixed Housing Suburban
- Large Lot
- Rural and Coastal Settlement
- Conservation
- Informal Recreation
- Rural Conservation
- Countryside Living
- Coastal Transition
- General Coastal Marine
- Mooring
- Future Urban
- Water

A13220 OKURA RUB

# Zoning - IHP Recommendation

Date: 23 August 2017 | Revision: A

Plan prepared for Todd Property by Boffa Miskell Limited

Project Manager: Rachel De Lambert | Drawn: SGa | Checked: JIe