

18 February 2008

To Auckland City Council  
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**RE SUBMISSION ON NOTIFIED APPLICATION FOR RESOURCE CONSENT  
BY HOUSING NEW ZEALAND CORPORATION AT 94-130 HAVERSTOCK RD.**

*1. Summary of Submission on Resource Consent*

From City Scene 19 January 2008 and the application we understand the application includes:

- Realignment of the Meola Creek channel
- Works on a site identified as subject to flooding
- Replacing 19 existing by 41 planned residential units
- Building in relation to boundary
- Reduction in provision of landscaped and permeable areas
- Shortfall of 20 parking spaces
- Excavations of 4000 cu m including 200 cu m of rock; and total fill of 5500 cu m
- Removal of protected trees

94-130 Haverstock Rd borders on upper Meola Creek as noted in the Resource Consent Notification. As such, STEPS takes a keen interest in HNZN plans, and is available for discussion and consultation. To date HNZN has not contacted us. (See Appendix 1 for outline of STEPS aims and focus).

We note that the Auckland City (AC) District Plan (DP) Annexure 2, p3 shows the following significant natural features which directly relate to this development:

- **Volcanic Landform - Mt Albert** – approx 200 meters West
- **Aquifer – Underlying Haverstock Rd** and surrounding district – ie on site
- **Ecological Area - Western Springs** – 2km north and a part of the Meola Catchment aquifer (See Appendix 2C4)
- **Significant Stream Channel – Meola Creek** (one of only 5 publicly owned water courses in Auckland City) – on this site; and indeed likely to move, if HNZN application is approved.

In Part 5A Natural Resources, the DP lays out how important each of these elements is. These and a few other “particular environmental elements... can and must be maintained and where practicable enhanced” (p4). The DP also states the principal goal of the

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**Website:** <http://www.meolacreek.org.nz/>

Resource Management Act, sustainable resource management will be achieved by adopting strategies to address natural environment issues.

It is unclear to us that any consideration has been given to the protection or enhancement of these significant natural features of Auckland City.

Further, the DP states (Part 5A p 4) notes that a combined foulwater/ stormwater sewer system serves approximately 16% of Auckland city's area. We will show that sewers in Meola catchment constitute a large part of this.

Finally the DP states (Part 5A p 8) that mechanisms to recognise and enhance the qualities of water resources include:

- “Development is limited in those areas with a significant drainage problem until it is remedied.
- “Consideration of sustainable recharge of aquifers when considering relaxation of the site coverage controls

The application does not cover the following aspects:

- Aquifers and springs: i) it is likely that in the extensive area (13500 sq m) of excavation planned, natural springs will be encountered. Given these are identified for protection in the District plan (and are the sources of water for Meola Creek)- how would this be managed without further degradation of the creek and the aquifers?  
ii) reduced recharge of the aquifer due to significant increase in impermeable area, exceeding ACDP standards by over 823 sq m
- Explanation on the meaning of “the proposed new public stormwater network will cater for the upstream catchment” (p3 Davis Ogilvie 23771)
- Explanation on why “ it is considered inappropriate and impractical to remedy all of the downstream flooding as part of the development proposal” p8 Davis Ogilvie 23771)
- Any rationale or extreme need for building on a known floodplain, adjacent to a protected creek (in fact building right on top of the natural course of this protected creek).
- Examination of replacement of 4000 cu m of highly permeable volcanic soil by 5500 cu m of imported fill of unstated quality
- The fact that the largest two sewer overflows in the Meola Catchment are at 96 Haverstock Rd, in the middle of this development. On average, more than one Olympic size swimming pool per day of raw sewage and stormwater flows from here, and reach daylight beside existing new HNZA houses at 160-162 Haverstock Rd.

We disagree with this applicant's claims that the “residential development is a sustainable proposal that is consistent with the District Plan's Objectives” and “will improve the amenity of the site for future residents and the surrounding neighbourhood” because the weight of objective and published evidence available does not support that view. We believe that the applicant is either not aware of or is ignoring the negative impacts of their plans on the St Lukes and wider Auckland communities and environment, especially those protected natural features.

Within the living memories of our members – Meola creek has contained fresh watercress which local people gathered and ate. There are many AC reports documenting the stream's recent decline, and many reports which promise that within 10 years the sewers will be separated; or the sewerage infrastructure will be fixed. To our knowledge no funded plan to relieve or improve the overflow situation is in place. (See Appendix 2F and 2G for some of these reports). We fail to understand why HNZC and AC would continue developing (and indeed moving the creek) without taking cognisance of this fact.

Further we are shocked and bemused by the statement that ARC has found as quoted on p35 that the moving of Meola Creek is a permitted activity within a watercourse and requires no consent? We request more information on this.

We oppose this application as it will have a detrimental impact on the local environment, and St Lukes residents (including HNZC occupants) as outlined below in Section 4.

Further, we submit that the amount of public money going into this development; and the involvement of the long list of public bodies including:

- Housing New Zealand Corporation;
- Auckland City Council
- Auckland Regional Council
- Department of Conservation
- Horticultural Research
- Watercare Services
- Metrowater

means that any change to Haverstock Rd represents an opportunity to enhance the health and value of both Meola Creek and the underlying aquifer.

We also submit that the existing Roy Clements Treeway represents a very fine example of forward thinking by a Central Government owned body (Mt Albert Grammar School or MAGS) and that HNZC should emulate this example by extending this walk way along Haverstock Rd adjacent to the protected Meola Creek channel.

While the existing situation is rooted in the historical combined sewer, Auckland City has had many years to start to reverse the situation. Public developments such as this HNZC Haverstock Rd represent another contribution to the ever growing tide of sewage and runoff that is pouring down Meola Creek. It is time to stop additional development on the creek, and start to take care of it. We look to HNZC as a Central Government Agency to provide some real financial and moral support to the Auckland City Council for the benefit of local residents, future tenants and Meola creek environment.

We wish to be heard in support of our submission.

## **2. SITUATION – MEOLA CREEK UPPER CATCHMENT**

Meola Creek originates at the foot of Owairaka/Mt Albert, and is fed by natural springs from the many aquifers which underly the Mt Albert/ Sandringham/ St Lukes area. Indeed the Springs which form the original source of the Meola Creek are on the DOC and HORT land referred to by the Applicant. See Appendix 2D.

Meola Creek is owned by Auckland City Council and managed by Metrowater. See Appendix 2C.

We recommend to the developer, their planners and their advisors two key sources of information :

1) Auckland City Drainage System Resource Consents, Assessments of Environmental Effects, March 2001 [“ACDSRC Report” available on line from Metrowater]

2) Meola Integrated Catchment Management Plan Phase 2 Report – Remedial Options (Sinclair Knight Mertz 2002) [“ICS report”] See Appendix 2A

In addition STEPS can provide a copy of a recommended unpublished report:

3) Assessing and mitigating the environmental impacts of stormwater flowing into Meola Creek and its receiving environments. From the School of Geography and Environmental Science, University of Auckland, October 2005. [“UA report”].

Further information was presented in a legal case:

4) Statement of Evidence by Michael McQuillan before the Environment court (St Lukes Park Owners Committee vs Auckland City Council) 11 October 2004 (RMA 626/02) [“McQuillan evidence for ACC” – attached in Appendix 2E]

These documents convey a picture of neglect of the past, existing and potential future environmental value of Meola Creek which flows into Waitemata Harbour on the South Western side of Meola Reef. Te Tokaroa/ Meola Reef is only 3 km downstream from HNZN. Te Tokaroa is designated as a Coastal Protection Area 2 under the Auckland Regional Coastal Plan; its marine vegetation zoned as Protection Area 1; and it is zoned as conservation zone under the 1987 Waitemata Harbour Maritime planning scheme. (p 138 ACDSRC Report). STEPS has found it difficult to reconcile these designations with the past and present activities which are conducted by Auckland City, Watercare Services, and others, in the Meola Creek catchment.

The reason that Auckland City and Metrowater applied for the drainage system resource consents in 2001 was so that we can continue to pour raw sewage and stormwater down Meola Creek and other watercourses into Waitemata Harbour for at least another 35 years. No current funded plan is in place to change this situation – though STEPS has held some discussions with both WCS and Metrowater on this subject.

Ch 7 of ACDSRC Report above states: “... water flows in some streams are greater than would be predicted from topographical catchment area – especially where waste water overflows originate outside the storm water catchment – add significantly to storm water flows”. ACDSRC Report also states

- The combined overflows discharge untreated wastewater into Meola Creek during approx **50%** of rain events

- Meola Creek estuary has the highest concentrations of enterococci (18,342 Ec/ 100 ml) and greatest number of days with Ec concentrations above guideline values which would require beach closure.

ICS report states:

- Poor water quality in Meola Creek is a produce of both waste water and storm water discharges to the creek. The main source of most bacterial and nutrient contaminants in Meola creek is from waste water discharged to the creek from overflow structures. Heavy metals and suspended solids within the creek originate primarily from storm water runoff that overflows from the combined sewer system.
- Measured bacterial levels were high along the whole length of Meola Creek. Levels in the upper reaches of the creek in the vicinity of MAGS [100m downstream from HNZC Haverstock Rd] exceeded the NZ guidelines for recreational body contact activities of 125 faecal coliforms and 33 enterococci.
- **The upper section of Meola Creek is in a far worse state than the lower reaches of the creek** [usually the opposite occurs in most waterways.]
- To a large extent the ecological health of Meola Bay depends on the health of the upstream catchment. Many of the pollutants from stormwater runoff and sewage overflows into Meola Creek ultimately end up in the coastal area.
- Approximately 40% of the Meola Catchment contain combined sewer systems In addition most of the waste water flows from soakage areas and separated areas contribute to the combined pipes
- There are 26 overflows within Meola Catchment that discharge combined wastewater and stormwater to the Meola Creek. These are listed on p7 – total 1.5 mill cu m per year; 0.722 million cu m (47%) of which issue from WCS at 96 **Haverstock Rd.** ie in the midst of this development. (See Appendix 2A6)
- **Level of service of combined sewer/ stormwater well below design standards of Auckland City and Metrowater – 50% cannot handle 1 in 3 year storm flow** (Section 2 p2)
- Up to 24% of combined wastewater within 1500 Ha catchment discharged to Meola creek in 1992 (Section 2 p3)
- Haverstock Rd and Lyon Ave (WCS overflows) worst – make up 90% of total flows in upper creek (Section 2 p3)

The UA report documented that

- 1) zinc from roofs and tyres was at very high levels in Meola Creek upper catchment
- 2) the estuarine receiving environment next to Meola Reef has critical levels of zinc and other heavy metals.

The report recommended that mitigation should focus on at source methods of controlling stormwater. These include **minimizing impervious surfaces** when constructing new subdivisions, ie. low impact urban design. Remediation can also include approaches such as siltation or detention ponds and sand filters to remove zinc and other contaminants before it enters the creek.

In October 2004, McQuillan evidence for ACC stated:

- a feature ... is the number of overflow relief points that discharge untreated waste water directly to the Meola Stream...[Meola creek] is considered highly polluted
- [High density] developments place a greater strain on waste water and storm water infrastructure than most business developments...primarily because of peaking

factors including a main peak in water use and waste water disposal between the hours of 6am and 9 am...[as a ] result of early morning ablution routines

- **The principle source of pollution is wastewater overflows from Watercare main trunk line upstream in Haverstock Rd**
- Just downstream is another major Watercare waste water overflow. This overflow regularly operates even in only light rainfall events
- ...A signal to readers of the District Plan that the site [4 Wagener Place] is appropriate for high density residential activity. In my view this would be conveying an incorrect signal given the public health risks associated with the pollution of Meola Stream and constraints associated with the area's waste water infrastructure.
- ... in the general area of **St Lukes/ Morningside where there are significant infrastructural issues**

[Note the site described above is about 200m downstream from Haverstock Rd and the Haverstock Rd WCS overflows].

In October 2004, Dietsch evidence for ACC stated:

- Sandringham... "area of change" is accorded a priority 3 rating; indicating that the area requires infrastructural upgrading before planning for growth may start
- In light of the priority 3 rating, [my view that 4 Wagener place would be capable of accommodating in excess of 100 residential units]...is dependent on the availability of **sufficient infrastructural capacity**.

Paradoxically, one of the major reasons for the poor health of Meola Creek is that its natural flow has been significantly reduced so that year round but especially in summer, the creek is as low as a few centimetres, except when WCS overflows occur and raise the creek level by several meters. Between its source on HORT land, adjacent to this Haverstock development; and the bridge at the top of Kerr-Taylor Reserve where the recently formed pipes end – water now flows at a small trickle. This is another area we request more information. Historical pictures show a sizable spring on HORT land.

There is also historic data available showing how the Haverstock Rd area is prone to flooding; so we believe it would be bad to construct additional units on such a site.

To provide additional context, Auckland City Council advised that the open space provision in the Eden-Albert Ward [where HNZA is located] in 2004 was 2.2 ha per 1000 people - the lowest for Auckland city, which averages 4.27 ha per 1000 people as compared to 4 ha per 1000 people, the general NZ standard. The fact that HNZA is in a ward which has approximately half the green space of every other part of Auckland City is relevant to the issue of runoff, and waste water discharge in the Meola Creek catchment, since green spaces usually have a high proportion of permeable surface. Permeable surfaces in this volcanic area are key to enhancing water quality in Meola Creek and Waitemata harbour.

### Conclusion

From the above and other sources published by Auckland City, Metrowater and others, it is indisputable that the protected marine life at Meola Reef is being progressively poisoned by the mix of raw sewage and overflow from increased impermeable areas, roads, galvanised roofs, and runoff from developments during construction.

Meola Creek / Kerr Taylor Reserve is prone to flooding several times a year – largely because of overflows from Watercare Services. According to the ICS report the volume of overflows including raw sewage flowing through Meola Creek equated to 1528032 cu m/ year [or 611 Olympic swimming pools per year - nearly 2 per day] on average. Nearly half of these come from 96 Haverstock Rd, and emerge adjacent to HNZN existing properties at 160-162 Haverstock Rd, approximately 5 meters from the creek. STEPS has available photos of the creek in flood, and videos of the water roaring through the pipes into the creek at 160 Haverstock Rd during a significant downpour in 2006. Existing HNZN occupants at 160-162 Haverstock Rd can see sewage in the creek at such times. This occurrence is observable a few times a year, often within even 1 hour or rain commencing.

To the Society's knowledge, no significant upgrades or improvements have been made to reduce the frequency or volume of raw sewage overflows into Meola creek since 2001. In our view it is highly likely they have significantly increased, in part because of the increase of high density development in this area. HNZN plans and the marginal impacts of these on an already fragile volcanic area and its related water sources, represent another incremental degradation of the environment, specifically on at least three significant listed natural features identified by the Auckland City DP as requiring protection.

### ***3. Detailed Submission opposing the Resource Consent.***

- 1) Impact on waste water infrastructure
- 2) Impact on public health
- 3) Impact on parking
- 4) Impact on traffic flow from additional car trips
- 5) Impacts from reduced landscaped area; and reduced unbuilt area ie reduced permeable areas
- 6) Building on a known flood plain; diverting the creek and building a high wall
- 7) Excavation and fill
- 8) Removal of protected trees
- 9) Other resource consent issues

#### **3.1 Impact on waste water infrastructure**

We submit that the proposed changes by HNZN will have a detrimental impact on the already fragile nature of the upper reaches of the Meola Creek, and on Waitemata Harbour. In particular, the reduction in permeable areas (both landscaped and unbuilt areas); and the addition of 22 more households adjacent to the creek will have an impact on Meola Creek, Meola Reef and Waitemata Harbour.

The impacts would come from:

- a) additional sewage – from the occupants of 22 additional units adjacent to the creek, placing further pressure on the outdated sewerage system, and adding additional raw sewage into Meola Creek in overflow situations
- b) reduced permeable surface would add to the stormwater runoff, again increasing the volume of waste water and surface contaminants into Meola Creek during increasingly frequent overflow situations, as well as preventing natural aquifer recharge.

Given the publicly acknowledged inadequacies of the waste water and sewerage infrastructure in St Lukes and Meola Creek (as outlined above), we ask HNZN and AC why they believe it is acceptable to pour more sewage, foul water and stormwater into Meola Creek as a direct result of this development. We request that the marginal impacts of any increase in the number of residences and any reduction in permeable surfaces be realistically assessed.

We oppose the various reductions in permeable surface and we oppose the addition of 22 extra units over and above the existing HNZN properties.

#### **3.2 Impact on Public Health**

There is already a documented public health issue with high bacterial counts in the grounds of MAGS due to storm water inadequacies (as specified above from the ICS report). Some children play in the creek. Many hundreds of children walk daily past this creek. We request that HNZN consider the health of their existing and future tenants as well as local residents and do not add more households on this site.

There are similar public health impacts in Meola estuary – also stated above. Additional raw sewage, and runoff from HNZN may be difficult to measure, but it certainly has a marginal effect to worsen a public health situation which is already unacceptable, though not well known.



### **3.3 Impact on Parking**

We note that this development intends to remain at least 20 carpark spaces short, ie below Auckland City District Plan requirements for a 41 unit complex.

We believe that HNZC's expectation that tenants would have few cars, and would routinely walk to Sandringham shops or St Lukes shops, each of which is over 1 km round trip, is unrealistic.

Given the addition of 22 extra units, we believe this development should provide the standard number of carparks for a development of its size as required by Auckland City council DP. We do not want to see the streets in the St Lukes area forced to take overflow parking from higher-density residential developments such as HNZC.

We request more information on why HNZC believes they should not meet the standards of the district plan. The streets of St Lukes already hold a sizable amount of overflow parking from various developments. It is unclear to us why HNZC feels they should not meet the general standards required by AC.

### **3.4 Impact on traffic flow from additional car trips**

We request more information on the traffic impacts at peak hour of the extra cars from 22 additional units. St Lukes rd is already choked with traffic at morning peaks. At 8.30 am it can take 30 mins to travel from Haverstock Rd to the entrance to the motorway on Great North Rd.

### **3.5 Impacts from reduced landscaped area; and reduced unbuilt or permeable area**

HNZC is requesting consent to exceed AC standards for impermeable surface area by more than 823 sq m. This represents 1.5 full sections of an average size in this neighbourhood. Given this shortfall in grassed area, we question whether HNZC has considered where the children in the proposed large households would play; and how much recreational area tenants in general would have.

We also question the relevance of the statement on p52 that the 823+ sq m excess impermeable area is to the rear of the buildings – ie directly beside or on top of the Meola creek channel.

Meola Creek already suffers from lack of natural water flow. STEPS opposes any reduction in the HNZC's landscaped area; or the unbuilt area. Our grounds relate to the clear environmental impacts demonstrated in Auckland City's and other reports, of the ongoing reduction in permeable surface in the St Lukes and Upper Meola Catchment areas. These impacts are on marine life and the environmental values of Meola Estuary/ Waitemata Harbour. A fetid creek with an acrid metallic smell is the price paid by all local residents for continuing reduction in permeable area and increased load on the storm water system.

We suggest HNZC should plan to augment and enhance the benefits provided to their development and the St Lukes area by the nearby MAGS owned and Auckland City

maintained “Roy Clements Tree way”, a strip of native vegetation adjacent to Meola Creek which acts as a public walk way. The reports above make it clear that it is not too late to reverse the detrimental effects that a century of poor development decisions have had on Meola Creek. While it will never be back to its original state, it is very clear that it can be substantially improved. Entities such as developers, particularly taxpayer funded developers, have more means than most to make a difference. Whether they choose to make a positive or a negative difference is their choice. We recommend to HNZC they choose to make a positive difference to Meola Creek and the surroundings on and outside their site.

### **3.6 Building on a flood plain; diverting the creek and building a high wall**

As noted above the Meola ICS report notes that the Level of service of Meola combined sewer/ stormwater is well below design standards of Auckland City and Metrowater – 50% cannot handle 1 in 3 year storm flow. The largest overflow in the Meola catchment is in the middle of this development (96 Haverstock Rd. Indeed it is one of the largest overflow sites in Auckland City’s entire combined sewer network). See Appendix 2B. We believe that they should not intensify use of the existing HNZC site; and should not be permitted to alter the course of the Meola Stream Channel.

Building on a flood plain near the largest overflow in the catchment, to a standard of 1 flood in 10 years when the number of heavy rain events and floods is documented as likely to increase due to global warming, makes no sense to us. It seems that the welfare of HNZC and existing St Lukes Residents as well as the environment, have been forgotten in the plans for new, more highly engineered solutions. Is it acceptable for HNZC tenants to be flooded every 10 years, or even more frequently?

The proposed 2.8 m high wall would not enhance the creek for existing residents, future tenants, nor improve the environment. It would be another eyesore on the natural landscape bordering the Meola creek channel.

### **3.7 Excavation and fill**

One of the main benefits of living near MAGS, Kerr-Taylor Reserve and Meola Creek, is that it is a quiet location, away from road and traffic noise.

We note that 4000 cu m of excavation is planned, including 200 sq m of rock. We understand that the existing (naturally in this area highly permeable volcanic) soil would be removed. This highly permeable surface is a major reason why the combined sewer system ever worked at all.

5500 cu m of fill would then be imported. We question the quality of this fill and ask whether it would be as permeable and full of scoria as the soil it is replacing.

In the light of the impacts on traffic and noise levels for existing residents we also ask:

- i) How many trucks would it take over how many days to export the soil?
- ii) How many trucks would it take over how many days to import the fill?
- iii) How long the rock breaking would take?

### **3.8 Removal of protected trees**

The existing streetscape of 94-130 Haverstock Rd is currently improved by the existence of many tall trees. We oppose removal of 10 out of 11 protected trees, keeping only one extremely tall exotic specimen. HNZN plans the removal of all native trees (kohuhu, Kermadec Is pohutakawa) and two bottlebrushes which provide excellent food for native birds along the corridor between Owairaka Mt Albert, through Hort Research, along the Meola Creek and through the Roy Clements tree way.

### **3.9 Affected parties and Other resource consent issues**

In our view, local St Lukes residents are definitely affected parties by the usage of this site for HNZN development. So are all the citizens of Auckland – who have a right to expect more environmental responsibility to be taken by HNZN, Auckland City and ARC in light of the local natural features listed in the District Plan.

We would like to see more consideration given by this developer to the wider community and will make ourselves available to have discussions on this topic.

We urge Auckland City, HNZN and other central and local government organisations to take this opportunity to solve the overflow situation at Haverstock Rd rather than pouring more runoff and sewage through Meola Creek, which is already in a critical state.

Elizabeth Walker

St Lukes Environmental Protection Society Incorporated (STEPS)

## Appendix 1

### *St Lukes Environmental Protection Society*

STEPS focuses on the upper reaches of the Meola Creek, the Kerr Taylor Reserve and the green spaces immediately surrounding it.

The Society greatly values the Owairaka/ Mt Albert volcanic field, Meola Creek and other associated natural features, and is working to achieve the following aims:

1. To enhance and improve the Kerr Taylor Reserve as an open space for use by the people of the St Lukes-Sandringham-Mt Albert area, through working with the Community Board, the Auckland City Council, schools and other groups.
2. To see the quality of the water in Meola Creek improved, and the public health, environmental and cultural values increased, through working to ensure that the Auckland City Council, Watercare Services and Metrowater improve the water quality and upgrade inadequate drainage and sewerage systems.
3. To maintain or expand the extent of the existing open spaces and walkways in the St Lukes area, through working with all groups who have an interest in the area.

The Society is hopeful that as environmental awareness grows, Auckland City will “daylight” or restore the Meola Creek, and remove the piping and armouring put in place by engineers over a number of years, obscuring the once attractive natural water course.

Auckland City Council has recognised STEPS as a stakeholder in the Kerr-Taylor Reserve, and the Society has recently been working with Metrowater on public education talks and on planting the banks of Meola Creek. Our plantings will reduce water temperature and enhance both bird life and marine life in the creek.

Most recently we have added Meola Creek to the list of NZ Rivers in wikipedia [http://en.wikipedia.org/wiki/Meola\\_Creek](http://en.wikipedia.org/wiki/Meola_Creek) and established the web site address below.

## **Appendix 2**

Extracts from Auckland City, Metrowater and Watercare Services Reports on Meola Creek and Western Springs.

A Meola Integrated Catchment Management Project Phase 2 report- Remedial Options (Sinclair Knight Merz 2002)

B Watercare Detailed Annual Sustainable Development Report 2001

C Meola 1C Management Project Phase 1 May 2000 (Sinclair Knight Merz)

D Integrated Catchment Study Stage 1D Water Quality Monitoring Report (Area 1) (Auckland City, Metrowater)

E Statement of Evidence by Michael McQuillan before the Environment court (St Lukes Park Owners Committee vs Auckland City Council) 11 October 2004 (RMA 626/02)

F1 Watercare Services Wastewater Asset Management Plan 2004-5

F2 Watercare Services Wastewater Asset Management Plan 2002-3

F3 Auckland City Drainage System Resource Consents, Assessments of Environmental Effects, March 2001

F4 Metrowater Sewer Separation Strategy

G Meola Stormwater Management Plan Volume 5 – Management Plan (1997)