



Westfield St Lukes Plan Change

STEPS (St Lukes Environmental  
Protection Society Inc)

Elizabeth Walker

Presentation to St Lukes  
Hearings 22 June 2010



# Agenda

- STEPS Introduction
- Westfield and Meola Creek Location
- District Plan and Natural Volcanic Environment
  - Lava Rock Forest –Gribblehurst Park
  - Meola Creek
- Westfield Plan Change, Stormwater and Waste water
- Comment on Expert reviews

# Meola Creek Location

- Flows on edge of lava flow from 3 Kings
- Drains into Waitemata Harbour - feeds protected Meola Reef
- Westfield St Lukes
- Owairaka - Mt Albert Volcano



# Meola Catchment

3 Volcanic cones, springs and large aquifer

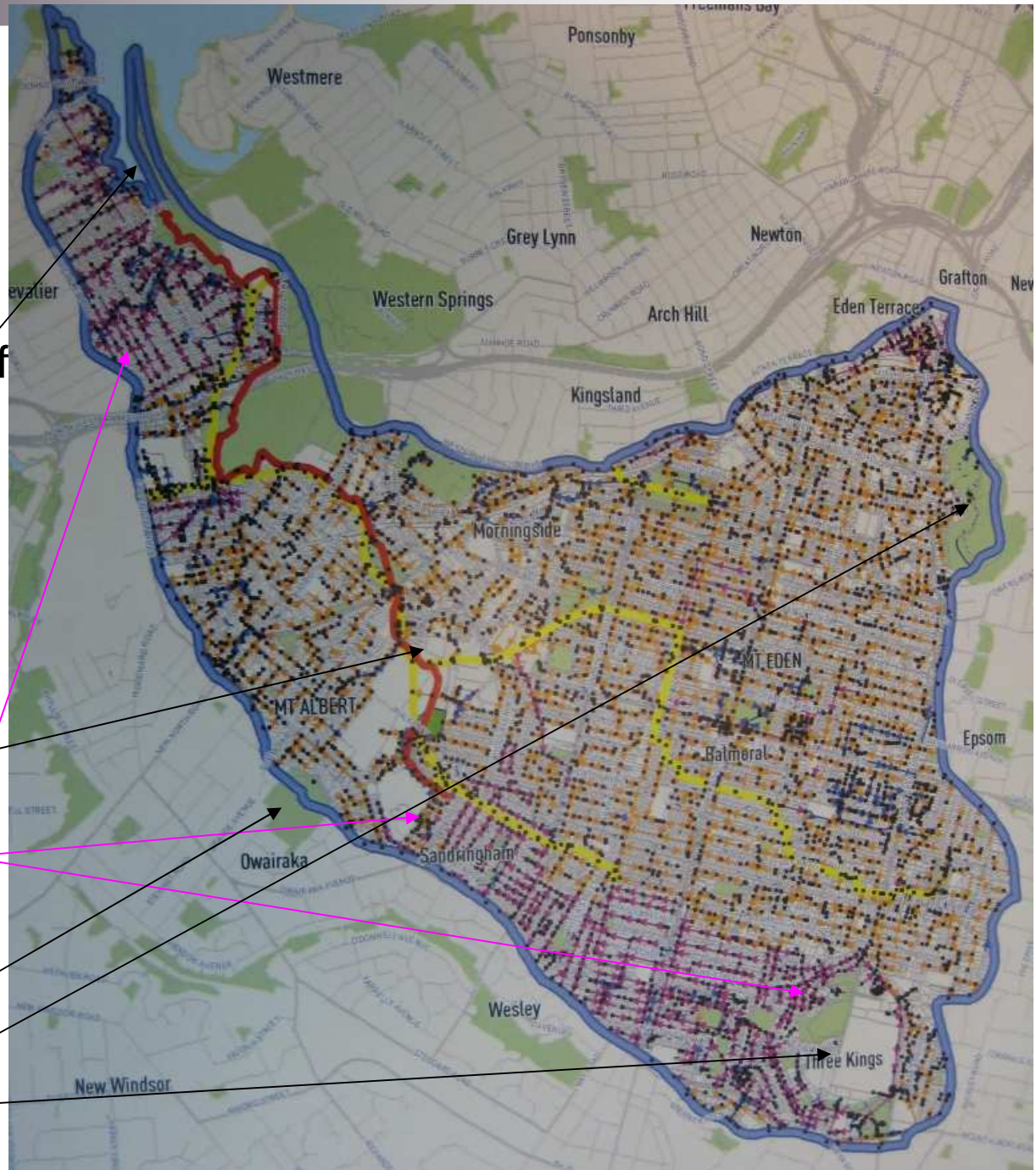
Feeds protected Meola Reef

Largest catchment on isthmus; 5% pasture, 1% forest – 45% urban residential and 47% permeable

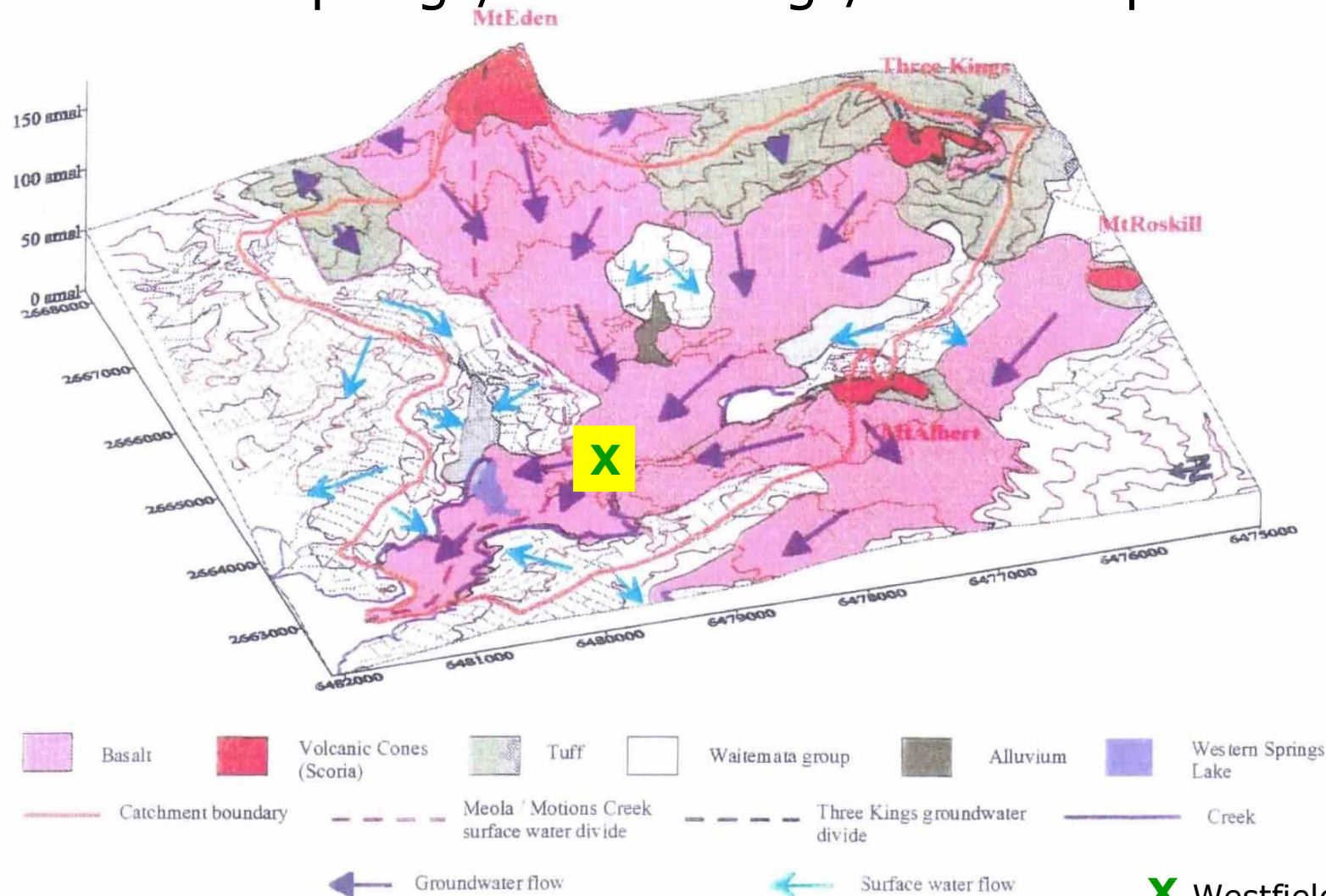
Westfield St Lukes

Combined sewers in pink

Owairaka Mt Albert  
Maungawhau Mt Eden  
Three Kings



# Western Springs/ Three Kings/ Meola Aquifer



**X** Westfield location approx

**3d Hydrogeological Model of the Western Springs Aquifer (Viljevac 1998 Figure 2.12).**

References: Clarke, C, Roy Clements Treeway Boardwalk – Urban stream management

<http://www.nzsses.auckland.ac.nz/Conference/2008/papers/Clarke.pdf> p6

Viljevac, Zeljko, 1998: Western Springs Aquifer – Hydrogeological Characteristics and Computer Model. The University of Auckland.

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# Cabbage Tree Swamp



John Backhouse, 1880s – Alexander Turnbull Library



# Westfield St Lukes Location

- 400 m from upper Meola Creek
- 4 km from Waitemata Harbour
- At confluence of 3 lava flows
- On a lava field in an active volcanic zone – geologically “young”
- On the edge of Pacific plate
- Fragile and rare basaltic volcanic landscape



# St Lukes area and District Plan

Auckland City (AC) District Plan (DP) Annexure 2, p3 and Appendix 3C show the following significant natural features which directly relate to the Upper Meola Creek:

- **Ecological Area Lava Flow Forest** - Gribblehurst Park
- **Volcanic Landform - Owairaka, Mt Albert** approx 200 meters West and surrounding district – ie on site at Westfield; **Three Kings** approx 3km South East
- **Aquifer – Underlying Meola Catchment and Western Springs**, Three Kings. [It is sometimes called Meola Catchment aquifer, Western Springs Aquifer or Three Kings aquifer.]
- **Ecological Area - Western Springs** – 2km north and a part of the Meola Catchment aquifer
- **Significant Stream Channel – Meola Creek** (one of only 5 publicly owned water courses in Auckland City)
- **Ecological Area – Te Tokaroa Meola Reef**





# St Lukes area and District Plan

- 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 Resource Management Act, sustainable resource management will be achieved by adopting strategies to address natural environment issues.
  
- The DP states (Part 5A p 4) notes that a combined foulwater/ stormwater sewer system serves approximately 16% of Auckland city’s area.  
[From STEPS understanding and evidence, sewers in Meola catchment constitute a large part of this]
- The DP also 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



# Meola Creek

10 December 05



# Planting Meola Creek



- **STEPS together with Metrowater, planted Meola Creek banks with about 1000 native plants in 2007 – to shade and cool the creek**



# Te Tokaroa Meola Reef





# Some References

- Auckland City Drainage System Resource Consents, Assessments of Environmental Effects, March 2001
- Auckland City's Draft Long-term Plan 2006-2016
- Meola Integrated Catchment Management Project. Phase 2 Report - Remedial Options
  - (Sinclair Knight Mertz 2002)
- Watercare Detailed Annual Sustainable Development Report 2001
- Sewer Separation pamphlet (Metrowater)
- Wastewater Asset Management Plan 2002-3; and 2004-5

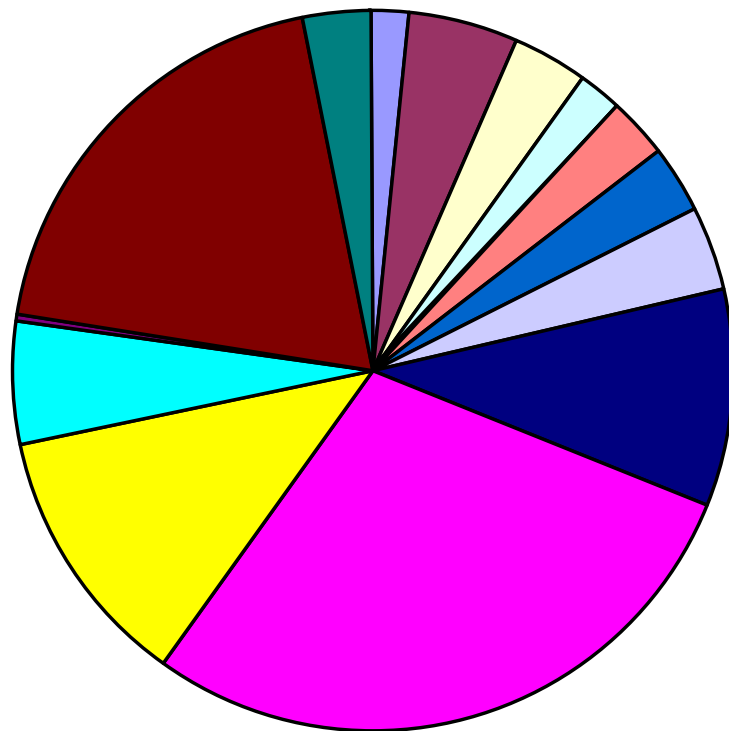
*These are excellent reports containing solutions.*



## Meola Creek – ICS Findings (2002)

- 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
- Discharge from waste overflows was 34% of total Meola creek volume in 1992
- Haverstock Rd and Lyon Ave (WCS overflows) worst – make up 90% of total flows in upper creek
- High bacterial levels. NZ Guidelines for body contact exceeded in vicinity of MAG school
- Ecological health of catchment and Meola Bay depends on health of upstream catchment
- Upper catchment most degraded – so most responsive to enhancement activities

# Watercare Combined Sewer overflows by Volume (2001)



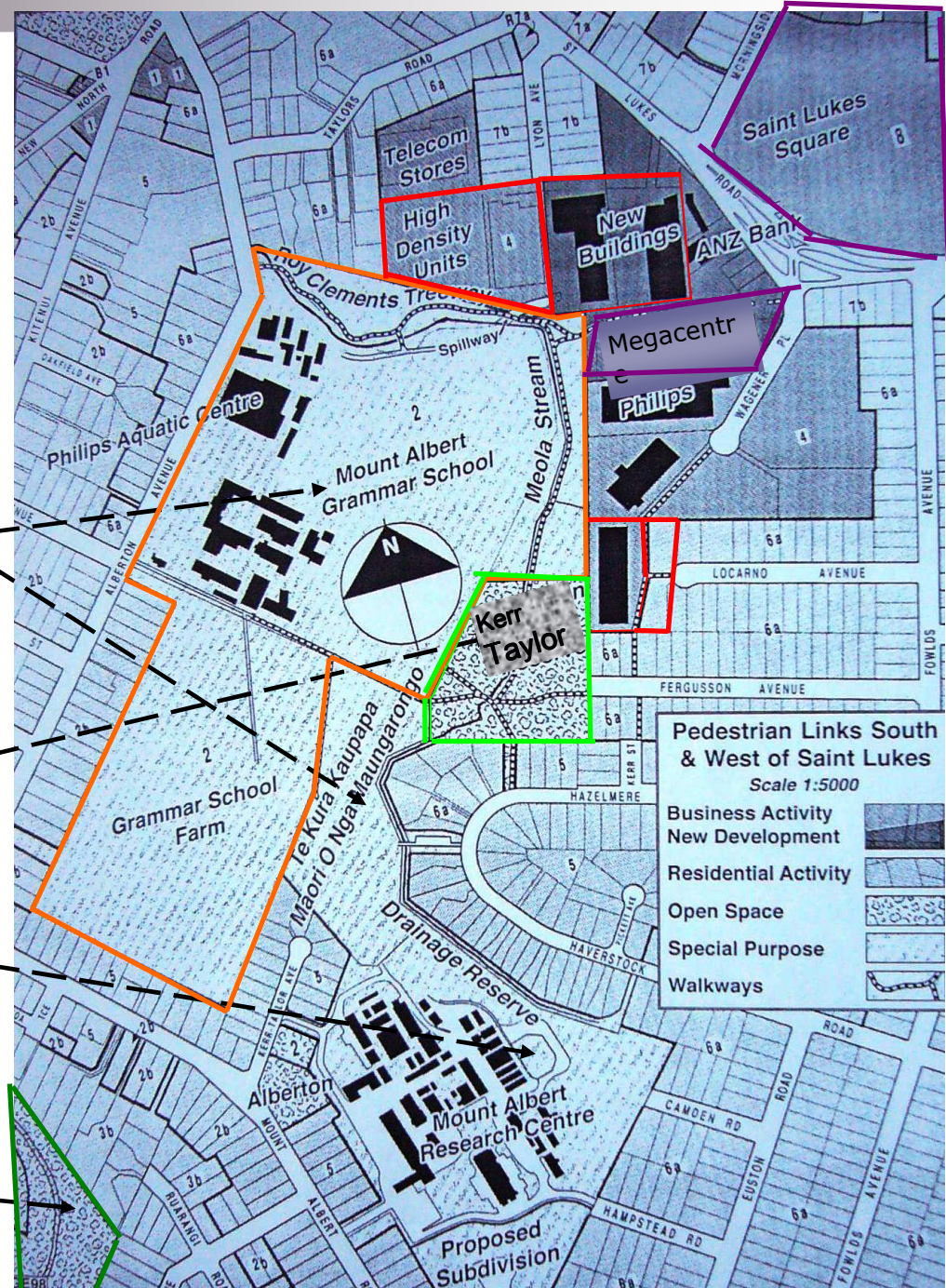
- Hobson Bay
- Newmarket
- Orakei
- Stanley St
- CBD
- Cocks Creek
- Freemans Bay
- Herne Bay
- Meola Creek
- Mt Albert
- St Lukes
- Pasadena
- Oakley Creek
- Western Springs
- Zoo

**Meola, Mt  
Albert, St  
Lukes– 56%**

**Pasadena,  
Oakley Western  
Springs and  
Zoo– 28%**

# Kerr Taylor Reserve location

- Borders 2 schools
- Kerr Taylor Reserve
- Meola Creek source
- Owairaka Mt Alber<sup>t</sup>





# Upper Meola Creek

Between Westfield St Lukes Mall and "DSIR" on foothills of Owairaka/ Mt Albert

**Westfield St Lukes**

**Kerr Taylor Reserve**

**Roy Clements Treeway**

**Lyon Ave Overflow**

**96 Haverstock Rd Overflow**

**Buried / piped creek**

**Mt Albert Grammar School**

**Te Kura Kaupapa Maori o Nga Maungarongo**



**Plant and Food (ex DSIR)**

Note several more high density residential developments in the area. Photo by St Lukes Environmental Protection Society (STEPS)

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# Wetland and Springs



Roy Clements Treeway – 2008 prior to wetland plantings 9-10 May 2009 and 20 June 2010



# Meola Creek

# STEPS MAGS Wetland

20 June 10



# New Wetland – with clear springs

20 June 10



# Wetland in flood – 1 June 2010





# Meola Creek – Lyon Ave Outfall

# Lyon Ave outfall



**Lyon Ave WCS** sewer outfall under St Lukes Megacentre is normally dry

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# Lyon Ave WCS Outfall



Normal spillway – though grid now covered by black curtain

# Meola Creek – 1 October 2006 Flood



Lyon Ave WCS Outflow under St Lukes Megacentre is normally dry  
(KW)

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# Meola Creek near St Lukes Westfield



1 October 2006 Flood. Lyon Ave WCS sewer outfall. Expert information says there is sufficient sewer capacity – but which sewer?

# Meola Creek – 1 October 2006 Flood



Flooding over Mt Albert Grammar School Fields KW

# Meola Creek – 1 October 2006 Flood



View near Lyon Ave

**Grounds of Mt Albert Grammar School – bacterial count exceeds NZ guidelines for body contact**

# Meola Creek – 1 October 2006 Flood

View to north  
(Lyon Ave and  
SLGA at back)



# “Normal” overflow – Lyon Ave

**December 2009**

View to north  
(Lyon Ave and  
SLGA at back)



# New plantings by boardwalk

'Normal'  
Overflow  
February  
2009

Down  
stream  
from Lyon  
Ave





# Meola Creek – boardwalk and planting

Looking west  
from Lyon Ave  
16 May 2010



# Overloaded sewerage

1 June 2010

View to north  
(Lyon Ave and  
SLGA at back)

**First record  
of flooded  
boardwalk**



# Overflows – Lyon Ave

1 June 2010

View to  
south from  
Lyon Ave



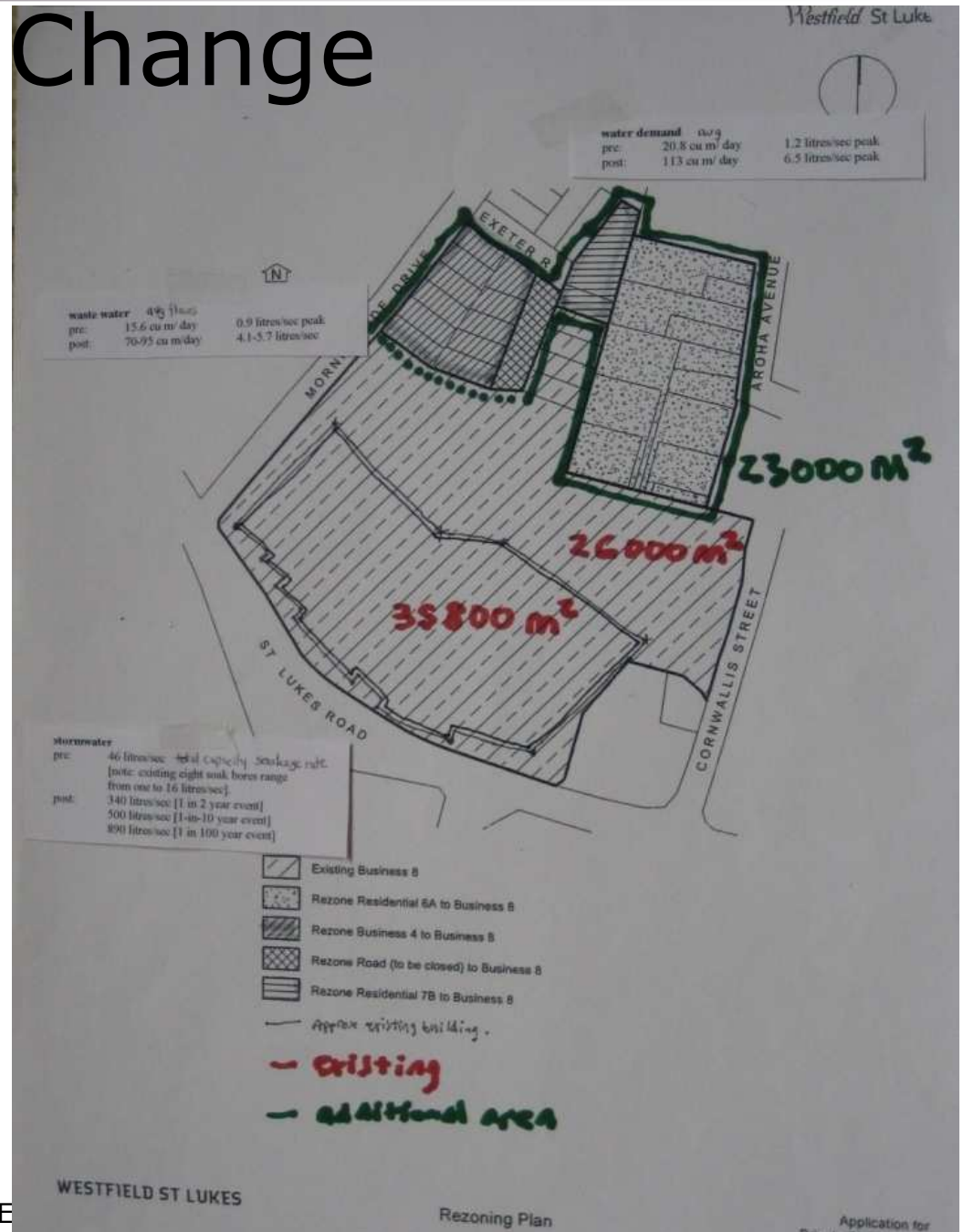


Future

Westfield Plan Change

# St Lukes Plan Change

- Nearly 37% larger footprint
- Stormwater increases by 10-20 times from 46 Litres/ sec now to 500 (10 year event) or 890 (100 year event)
- Water usage peak and average flows about 5 times higher
- Waste water peak flows about 8 times higher
- Drainage of existing car park area does not meet standards



# St Lukes Westfield Demand

Westfield St Lukes

Plan Change Application

Tonkin and Taylor Reports 18 Nov 2008

& March 2009

p1620 <b>Water Demand</b>	Average daily (m3/day)	Peak (l/sec)
5.1 Pre Dev residential	20.8	1.2
Post Dev resid plus SL expanded	113	6.5

p1615 <b>Stormwater</b>	Average daily (m3/day)	Peak (l/sec)
3.1 Existing North carpark	?	46
Post Dev - design 1 in 10		
3.2 year event	?	500
Additional requirement		454
Post Dev - design 1 in 2		
year event		340
Post Dev - design 1 in 100		
year event		890

**Water – 5-6 fold increase**

**Stormwater – 10-20 fold increase**

# St Lukes Westfield Demand

Westfield St Lukes

Plan Change Application

Tonkin and Taylor Reports 18 Nov 2008

& March 2009

p1618 Waste Water	Average daily (m3/day)	Peak (l/sec)
4.1 Pre Dev residential	15.6	0.9
Post Dev resid plus SL expanded (MW Manual)	94.9	5.7

p 1646

2a) Revised post dev expanded	130	
<b>INCREASE est</b>	<b>123</b>	<b>7.1</b>

p1646 Westfield Existing

	Actual Wastewater (m3/day)	cu m/ year	Olympic pools/ yr
2006	172	62,780	25
2007	117	42,705	17
2008	123	44,895	18

**Double volume of waste water every day.**  
**8 fold increase at peak**

2,500 cu m = 1 Olympic pool  
 1,000,000 400

Auckland Waterways  
 St Lukes Environmental Protection Society (STEPS)

Issue 7 Aug 2009  
 22-June-10



# Waste water and Storm Water Flows

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

- A **five fold increase in sewage** from the occupants of new residential units near to the creek, placing further pressure on the outdated sewerage system, and discharging additional raw sewage into Meola Creek in overflow situations.
- A **10 fold increase in stormwater runoff** because of reduced permeable surface
- Note that **Westfield now estimates an 8 fold increase** in waste water at peak times (see prior slide).





# The Sewer is Full

1.6 Meola Creek is already overallocated. Westfield St Lukes cannot provide any more waste water or sewage flows – and in fact should reduce them significantly. How can approval be granted to discharge five times what they already discharge into a sewerage system which is already seriously short of capacity?



# St Lukes Westfield Plan Change

- Westfield plan change; Watercare once again state there is adequate capacity in the sewer – but which sewer?
- The sewer is full!
- All additional Westfield waste water will add to peak overflows in Meola Creek at Lyon Ave.



# Key Points re Westfield

- Infrastructure is required before development
- We do not know that the new interceptor will be built by 2018-19 (though we hope it will – it cannot be assumed)
- Water retention on site – not just slowing the flow but using it and providing amenity value



# Westfield Forecasts Variable

- Uncertainty and variability are inherent in relation to future overflows

## Past Examples:

- Westfield past record in planning for stormwater: "existing northern carpark was constructed in 2003 and appears to have inadequate stormwater disposal capacity."
- Waste water estimates by Tonkin & Taylor/ Westfield rose by nearly 40% from 95 to 130 cu m /day between December 08 and March 09

# Meola Creek Overflows – Lyon Ave

Are there 80 per year - or only 42 as cited by Westfield/  
Watercare Services?

Report: Meola Integrated Catchment Management Project. Phase 2 Report - Remedial Options  
 Author: Sinclair Knight Merz  
 Page 7  
 Note: 2,500 cu m = 1 Olympic pool  
 1,000,000 400

Overflow location	Volume of Overflow (cu m / year)	Overflow owner	No overflows over 10 cu m	% of total overflow volume	# pools
96 Haverstock (1)	388,107	Watercare	90	25%	155
96 Haverstock (1)	333,860	Watercare	137	22%	134
Lyon Ave	207,848	Watercare	80	14%	83

Watercare Detailed Annual Sustainable Development Report 2001  
 Note: 1,000,000 400

Table 10 Combined Sewer overflows

Overflow structure (branch, manhole)	Location	Volume of Overflow (cu m / year)	Annual max oflow (cu m/s) (above 0.5)	No overflows per year	% of total overflow volume	# olympic pools per year
8-31	Mt Albert	269,661	3.37	56	29%	107.9
Edendale 01	St Lukes	110,987	3.42	42	12%	44.4

(Appendices A6 and B2 of STEPS submission)



# Stormwater Soakage estimates

- Note Expert report – re need to measure each borehole re soakage capacity
- P627 ...T&T's 3 new test drillholes put down to test soakage rates -observed variable rates from 10 l/sec to 58 l/sec; average 39 l/sec; needing 35 soakholes for option 1
- If true average were 20 l/sec – would need approx 70 soak holes... so “feasibility of being able to secure adequate soakage is uncertain”

# Cumulative effects – waste and storm water

- The RMA allows for consideration of cumulative effects
- How many “less than minor effects” does it take to create an overflow?
- Is 2.2% enough to make a difference to the peak flow?
- Is 3% enough to make a difference to the waste water concentration?

[refer Westfield C Chrissafis p9 4.22, 4.23]

- $3\% * 33 = 99\%$ - so 33 <minor effects could double the waste water?

*(I have personally sat through 5 hearings in Meola Catchment over the last 4 years...)*



# Opportunities for Westfield

- Unique Lava rock forest – on Westfield's own site, Gribblehurst Park "Cabbage tree swamp", and Meola Creek "Roy Clements treeway"
- Old quarry – as a soakage area – visual and aesthetic appeal can be enhanced and made into a community asset





# Conclusions

- Meola Lyon Ave sewage overflows are currently unacceptable
- All Westfield waste water at peak will add to overflows, and as such provide significant adverse effects
- Given the lack of waste water infrastructure and the uncertainty around Westfield's estimates, STEPS does not see how this plan change meets the DP where *"Development is limited in those areas with a significant drainage problem until it is remedied."*



# Invitation

- Site visit – we invite Commissioners to Lyon Ave and Roy Clements tree way
- We already invited Mr Drew and Westfield



# Background



# St Lukes Environmental Protection Society (STEPS)

- Incorporated 2005
- 28 members and 47+ registered supporters
- Focus on St Lukes area

Notes:

- St Lukes already has many residential developments under way and just completed



# STEPS Aims

1. To enhance and **improve the Kerr Taylor Reserve** as an open space for use by the people of the St Lukes-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



# Kerr Taylor Reserve Future Vision

- 2+ Hectares of **open space with trees and fresh water** – enhanced environmental values (Native NZ **vegetation**, **wildlife** including the pukekos and ducks, eels in stream), and restored **wetland**
- A **clean**, rehabilitated **Meola Creek – links** to Chamberlain Park, Pt Chev before entering **Auckland Harbour** at protected Te Tokaroa Meola Reef
- **Partnerships** between the residents, local schools (eg MAGS, Te Kura Kaupapa Maori o Nga Maungarongo), local businesses and other local groups
- Maintained or **extended reserve and walkways** linking the St Lukes Megacentre, Alberton Ave, the MAGS school farm, Hampstead Rd and Fergusson Ave
- All for use by the **present and expanding future local communities** of St Lukes, Sandringham and Mt Albert



# AC Metrowater report (2001)

- ...reserves [bounding streams] are valuable public amenities. Furthermore the availability of this public land adjacent to stream channels offers the potential to further rehabilitate the streams and so increase their public value
- ...biological value of many Auckland streams was low—reflecting poor habitat and poor water quality
- ...concrete channels ... surrounded by riparian vegetation dominated by short grass. These sites represent the extreme engineering solution to managing urban runoff and have resulted in streams that serve only as drains. Such streams have little or no biological value.

Note: Metrowater is 100% owned by Auckland City Council



# Futures

- “Rewater” Upper Meola Creek
- Need funded plans to stop overflows through the creek (ACC, WCS and Metrowater)
  - Sewer separation – Meola should be next
  - Upgrade by Waterare Services
- Protect creek
  - Catchment Management Plan for Meola Creek
  - How to protect Meola and other creeks in the District plan?