




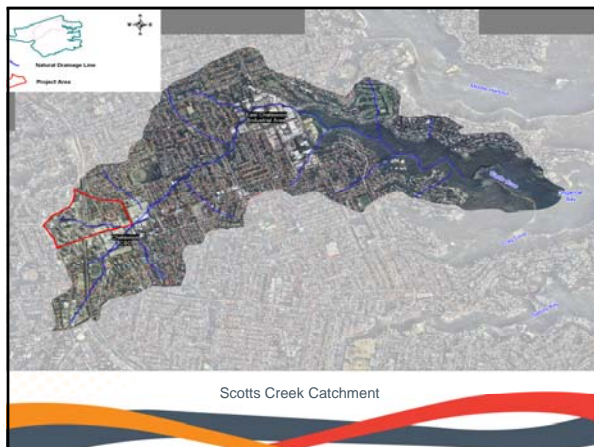
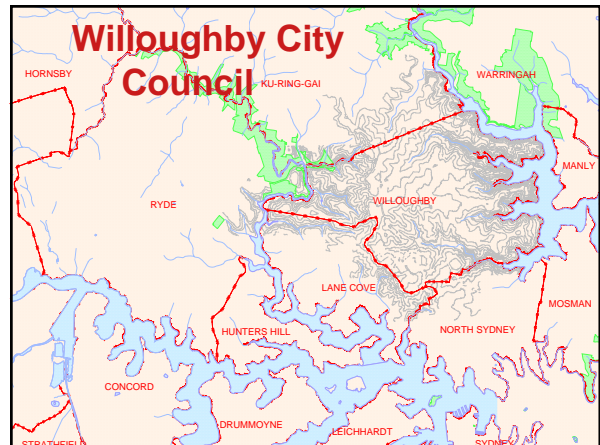
INTEGRATED STORMWATER MANAGEMENT SCHEME



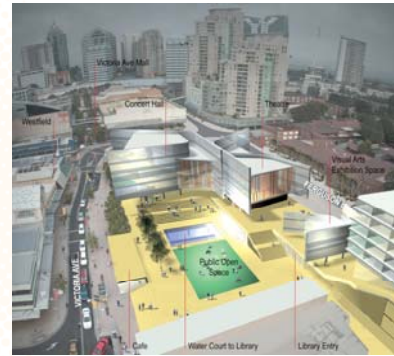
- Key Features:
 - Flood Mitigation
 - Stormwater Reuse
 - Reduce Chatswood potable water demand
 - Sustainability Education

The Catchment





Chatswood looking west



The Concourse

Stormwater Reuse



Stormwater Reuse - End Uses

- Non potable water supply to –
 - The Concourse
 - Local Shopping Centre / other users
- End Uses
 - Cooling tower make up water (70 – 80%)
 - Toilet flushing
 - Irrigation (Subsurface)
 - Water feature top up

Design Process

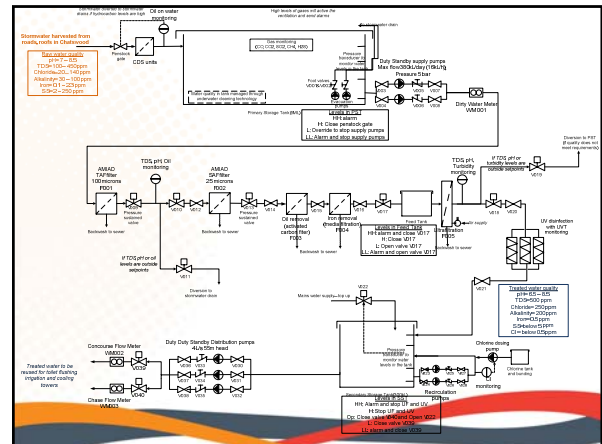
- Risk based design
 - Application of Australian Guidelines for Water Recycling. Part 2 Stormwater Harvesting and Reuse - July 2009
 - HACCP / HAZOP
- Background data collection
 - Establishing demand
 - Establishing minimum quality requirements
 - Cooling tower issues (TDS requirements)
- Establish raw water quality parameters
 - Water quality sampling (Base flow and stormwater flows)
 - 1 month of sampling with 3 storm events
 - Water quantity assessment (Base flow and stormwater flows)
 - 6 months of data collection

Stormwater Treatment Plant - Design

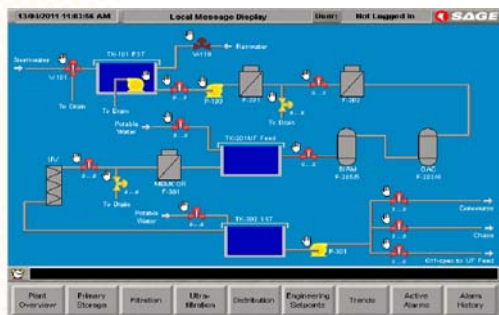
- Primary oil sensor- inlet to PST
- Floating suction
- 100 micron filtration
- Water quality monitoring (pH, TDS, Oil) and off-spec management
- 25 micron filtration
- Activated Carbon Filtration
- BIRM – catalytic filter

Stormwater Treatment Plant – Design

- Ultra filtration
- Tertiary water quality monitoring (pH, TDS, Turbidity) and off-spec management
- UV irradiation
- 2 point chlorination
- Final water quality monitoring (pH free chlorine) and off specification management



SCADA Screen



Flood Mitigation

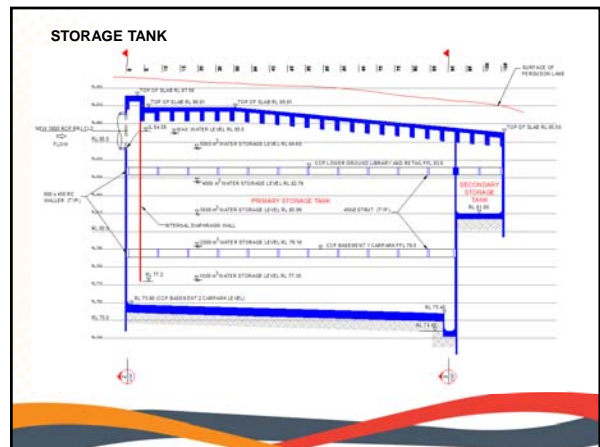
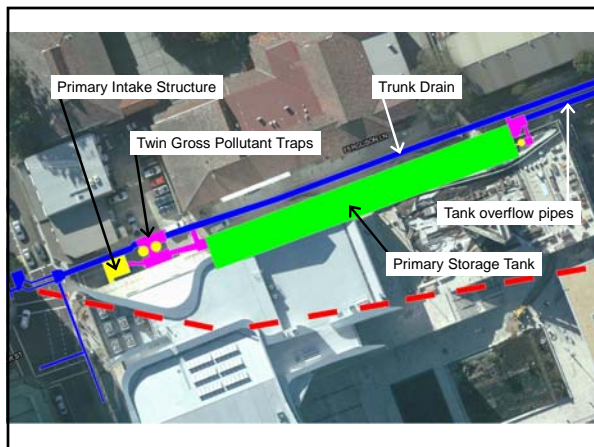
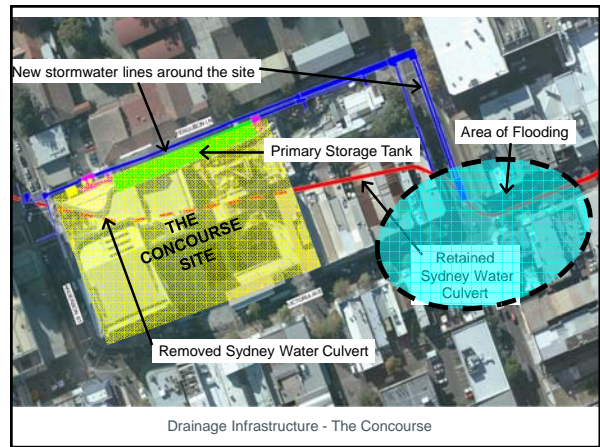
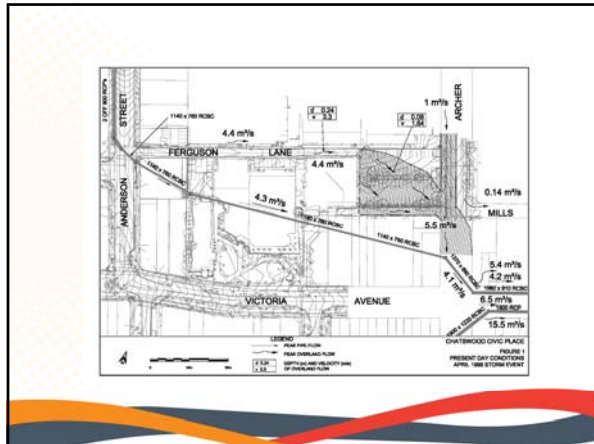


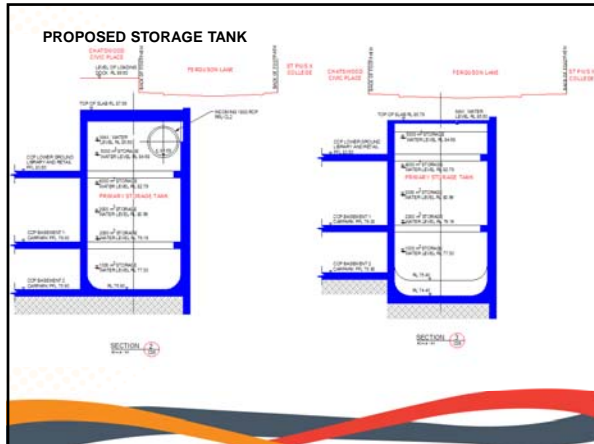
Flood Mitigation

- The Concourse was in the path of the 19Ha catchment natural drainage line
- The development had to ensure that downstream flooding became no worse
- To achieve this meant an OSD system
- The OSD was made bigger to address flooding from the upstream catchment

Flood Mitigation – Design Process

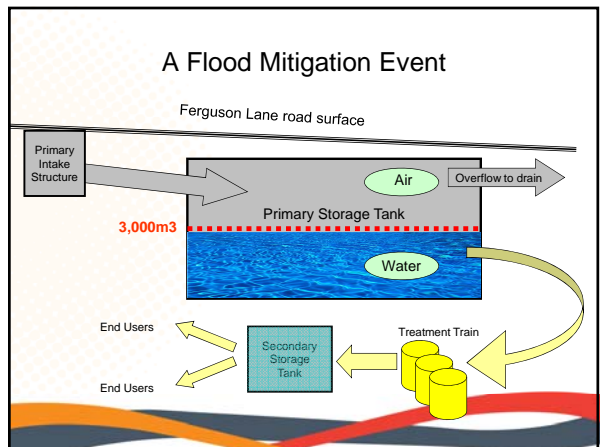
- Flood mitigation- tank sizing 5ML
- Penstock gate and knife gate valve
- Major overland flow structure
- Tank level monitoring (Pressure Transducers)
- Flood evacuation pumps and flow checking
- Early weather warning system
- UPS system

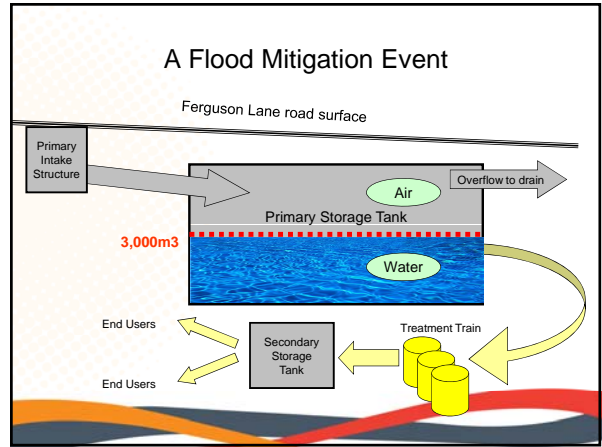
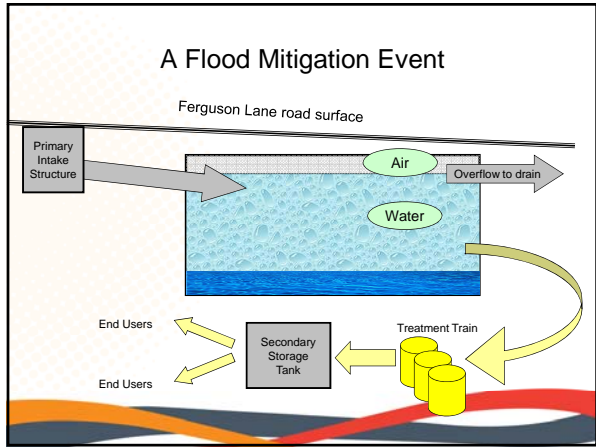
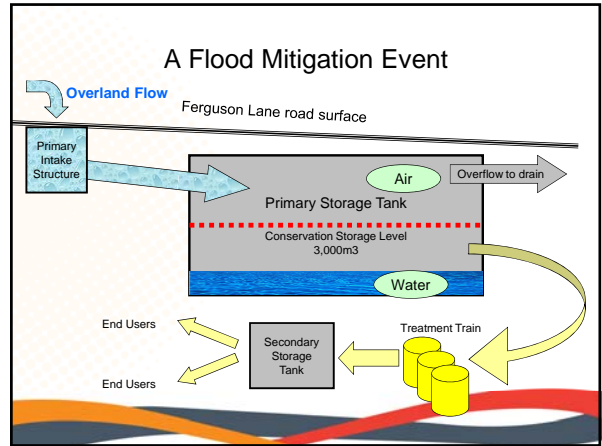
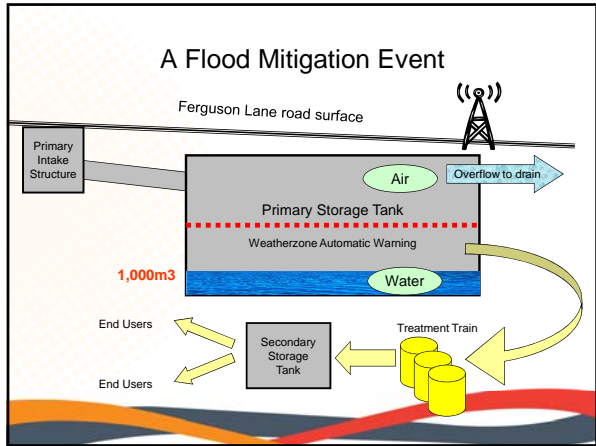




Flood Mitigation

Managing an Overland Flow Event





Early Weather Warning System

THE CONCOURSE
CHATSWOOD

weatherzone

South Wales/ACT Weather

Temperature

Wind

Humidity

Pressure

Cloud

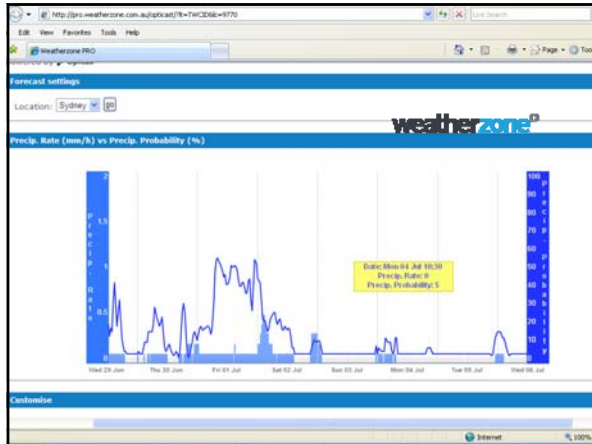
Visibility

UV Index

Forecast

Download our new FREE Enhanced weather App

6.35%



Design Innovation

- First urban stormwater harvesting for cooling tower water supply
- First automated flood mitigation system
- Expected to produce water at 0.45kwh/kL- compared to 0.54kwh/kL Sydney Water mains water supply
- Low water losses from filtration (3 to 7%)
- Minimal chemical use (chlorine only)

Consultants



Hydrological modelling, primary tank sizing, drainage design and documentation



Water treatment train design



Automated Early Weather Warning System

*Meet you on The Concourse
September 2011.*

