Joint IWCM Evaluation Study

Job Number A060

Section 2

Technical Note 2 – Part 2

LWU Obligations and Requirements

1 Introduction

1.1 Context

One of the key aims of this evaluation study is to identify the local water utilities (LWUs) issues. In the IWCM context an issue is a failure of an LWU to meet service obligations. A service obligation may be formal or clearly defined (e.g. a regulatory requirement, best practice management) and clearly or informal (e.g. Community preference) which may be less clear. Levels of service are formal obligations, but they may be modified to reflect community preferences and so fall between the formal and the informal.

1.2 Purpose

This Technical Note provides an outline of the key service obligations understood for each LWU, and, where information is available, comments about whether the obligations have been met.

It is provided for review and comment. The review should ensure that all key obligations are covered, and the compliance status is accurate.

Many different obligations apply to Local Government water utilities. This section identifies the key obligations, and those that refer specifically to the delivery of water and wastewater services.

2 Blayney Shire Council

Blayney Shire Council (BSC) is responsible for wastewater and stormwater.

Table B1: Blayney Summary of Obligation Related Issues

Obligation	Status/Issues
Regulatory	Wastewater: covered in Technical Note 4A Stormwater: covered in Technical Note 4A OH&S (see section 2.1) Dam Safety – Blayney does not manage any dams
Contractual	Blayney has a contract with Cadia Mine to (see section 2.2)
Levels of Service	Covered below (see section 2.3)
Best Practice Management	Covered in Technical Note 4A
Community Preference	Project Reference Group (PRG) to advise

2.1 Regulatory

OH&S Obligations

BSC is required to operate under the OH&S Act 2002. Page 20 of the 2007-2012 BSC Management Plan states target is zero breaches of OH&S act there is no data to verify if the target has been met. According to the 2007/8 BSC SBP (p61) "Council has developed an OH&S Policy outlining the roles and responsibilities of all employees within Council." It also states that all staff are familiar with key OH&S acts and amendments.

Table B2: Blayney OH&S performance

OHS Performance Indicator	2004/5	2005/6	2006/7	2007/8
Lost time due to injury(hrs)	97	156	89	202
Number of workers compensation claims	7	5	2	4

Data gap: OH&S performance for 2007/8 financial year

2.2 Contractual

- Cadia Mine agreement:

BSC has entered into an agreement with Cadia Mine to supply treated effluent from Blayney STP. The contents of this agreement are confidential. The effective outcome of this agreement is that while Cadia mine is in operation and taking all the effluent Blayney STP discharge meets its DECC licence requirements.

2.3 Levels of Service

Table B3: BSC Summary of Levels of Service (LOS) for Sewerage Services

Description	Unit	Current LOS	2007/8 Performance	Target (2012)
System Failures:				
Overflows	Number/yr	0	1	0
Pump/power	Number/yr	2	10	2
Blockages, collapses	Number/yr	25	314	10
			(TBL 2005/6 =0)	
Response times for system failures: (major spills etc)				
Priority 1 –during working hours	Minutes	30	20	30
Priority 1 –after working hours	Minutes	45	60	45

Description	Unit	Current LOS	2007/8 Performance	Target (2012)
Complaints				
General:				
❒ Written	Working days	1	unknown	1
❒ Personal/Oral	Minutes	30	unknown	30
Odour Complaints:				
❒ Treatment works outside buffer zone	Number/yr	0	Unknown (TBL 2005/6 =15)	0
❒ Pumping Stations	Number /yr	5	Unknown (TBL 2005/6 =0)	0
❒ Reticulation System	Number /yr	0	Unknown (TBL 2005/6 =0)	0
Effluent Discharge and Sludge Management: Failure to meet licence limits(100%ile)	Number of samples/yr	0	Unknown (TBL 2005/6 =0))	0

Source: 2007/8 BSC Sewerage Strategic Business Plan & 2005/6 DWE TBL Sewerage Performance Report

Data gap: Performance against SBP levels of service for 2007/8

Issue: Level of service failure:

- System Failures:
  - Overflows
  - Pump/power
  - Blockages, collapses
- Response times for system failures: Priority 1 –after working hours

2.4 Community Preference

To be advised from PRG meeting.

3 Weddin Shire Council

Weddin Shire Council (WSC) is responsible for wastewater and stormwater.

Table W1: Weddin Summary of Obligation Related Issues

Obligation	Status/ Issues
Regulatory	Wastewater: See Technical Note 4B Stormwater: See Technical Note 4B OH&S (see section 3.1.1) Dam Safety (see section 3.1.2)
Contractual	No contractual obligations have been identified
Levels of Service	Covered below (see section 3.2)
Obligation	**Status/ Issues**
Best Practice Management	See Technical Note 4B
Community Preference	Project Reference Group (PRG) to advise

3.1 Regulatory

3.1.1 OH&S

The Weddin Shire Council OH&S&R policy (revision 2007) is used to train staff & as procedures to ensure all works in WCS meet the requirements of the OH&S Act.

3.1.2 Dam Safety

WSC owns Company Dam.

Company Dam, although not in use, is a prescribed dam listed in the schedule 1 of the Dam Safety Act and as such Council is required to progress actions required by the NSW Dam Safety Committee (DSC). Although this dam is not in use there are a number of current actions required.

Data gap: Status of actions concerning Company Dam required by Dam Safety Committee.

3.2 Contractual

There are no contractual obligations for WSC.

3.3 Levels of Service

Table W2: WSC summary of LOS for sewerage services

DESCRIPTION	UNIT	LEVELS OF SERVICE	
		Current	Target
Availability of Service Extent of area serviced	Serviced area	All Grenfell urban areas serviced. No rural areas serviced except for Grenfell Country Club.	As per existing
Frequency of System Failures Category One Failure: due to rainfall and deficient capacity	Number/year	1 every 3 years	Nil
Category Two Failures: due to pump or other breakdown include power failure	Number /year	N/A	N/A
Category Three Failures: due to blockages	Number/year	40 to 50	Nil
Response Times to System Failure (Defined as the maximum time to have staff on site to commence rectification after notification.) **Priority One** (Major spill, significant environmental or health impact, or affecting large number of consumers i.e. a major main)			
Response time during working hours:	Minutes	60	30
Response time after hours:	Minutes	60	60
Priority Two (Moderate spill, some environmental or health impact, or affecting small number of consumers i.e. other mains)			
Response time during working hours:	Minutes	60	45
Response time after hours:	Minutes	60	60

DESCRIPTION	UNIT	LEVELS OF SERVICE	
		Current	Target
Priority Three (Minor spill, little environmental or health impact, or affecting a couple of consumers)			
Response time during working hours:	Minutes	60	60
Response time after hours:	Minutes	60	60
Response Times to General or Minor Customer Complaints and Inquiries:			
❒ Written complaints	Day	5	4
❒ Oral complaints	Day	1	1
Note: times for 95% of complaints			
Odour Complaints:	Number / Year	< 1 per year	0
Treatment works Odour complaints:	Number / Year	< 1 per year	0
Discharge Site 100 Percentile Concentration Limits:		Emu Creek1	
Biochemical oxygen demand	mg/L	18.4	20
Suspended solids	mg/L	26.4	30
Total nitrogen	mg/L	N/A	10
Ammonium nitrogen	mg/L	1.3	2
Oil and grease	mg/L	N/A	2
Total phosphorus	mg/L	7.38	0.3
80 percentile faecal Coliforms	cfu/100mL	N/A	<200

Source: Weddin SBP for Sewerage 2004

Data gap: Status of 2008 performance against 2004 Levels of Service?

Potential Issues:

- **Frequency of system failures current at 2004 versus targets:**
  - **Category one failure due to rainfall and deficient capacity**
  - **Category three failures due to blockages**
  - **Response time during working hours**
  - **Response times to general or minor customer complaints and inquiries written complaints oral complaints**
- **100%ile Total P discharge concentration at 2004 (7.3mg/L) to Emu Creek appears to exceed target 0.3.**

3.4 Community Preference

To be advised in PRG meeting. However the following has been extracted from the 2004 SBP:

According to the 2004 SBP no surveys had been carried out to determine the expectations and the level of satisfaction of the stakeholder. The table below lists the major stakeholders, their expectations and the level of satisfaction as perceived by Council's officers at that time.

Table W3: Community Service Rating

Stakeholder	How To Judge Success	How Does Council Rate Its Services? Score 1 - 10 (10 is excellent)
Government		
DLG	Accountability Standard of performance	7
MEU	Efficient operations	6
	Performance	7
DOE / EPA	Environmental requirements met	4
Health Department	Public health standards	4
General Users		
Property Owners and Ratepayers	Rates level	4
Residents Families	Quality services	8
	Public health standards met and maintained	6
	Guaranteed Service	8
	Reasonable cost	8
	Reliability of supply	9

Stakeholder	How To Judge Success	How Does Council Rate Its Services? Score 1 - 10 (10 is excellent)
Pensioners	Rates level	9
	Better Service	8
Commercial and Industrial consumers	Quality services	7
	Guaranteed services	8
	Reasonable cost	9
Other Users		
Downstream water users	Continued supply	3
	No future interference with their operations	3
Environmental Groups	Environmental responsibility	4
	Wastage minimised	4
	Environmental sustainability	4
	Discharge Quality	2
Tourists	Quality & quantity of services	6
	Aesthetics	5
Council		
Councillors	No complaints	8
	Good profile	7
	Compliance	6
	Continued availability	7
Engineering	Efficient service	8
	Affordable service	8
Council employees	Recognition for work	6
	Safe workplace	8
	Security	7
	Good schemes	7
	Support	7

4 Central Tablelands Water

Central Tablelands Water is a county council responsible for water supply.

Table CTW1: Central Tablelands Water (CTW) Summary of Obligation Related Issues

Obligation	Status/ Issues
Regulatory	Water Supply (see sections 4.1.3 and 4.1.4) OH&S (see section 4.1.1) Dam Safety (see section 4.1.2) Water extraction (see section 4.1.4) Water Quality (see section 4.1.3)
Contractual	CTW has a contract with Cowra Shire Council regarding supply to Cowra villages (see section 4.2).
Levels of Service	Water supply schemes (see section 4.3)
Best Practice Management	Covered in Technical Notes 4A,B &C
Community Preference	Project Reference Group (PRG) to advise

4.1 Regulatory

4.1.1 OH&S

Council has 19 employees and is therefore not required to have an OH&S Committee. A member of Council's operations staff has had safety training and conducts a quarterly safety audit across the complete area of operations and administration.

Council has in place a comprehensive OH& S policy a copy of which has been distributed to all employees.

The occupational health and safety of all persons employed within the organization and those visiting the organization are considered to be of the utmost importance. Resources commensurate with the importance attached to occupational health and safety will be made available to comply with all relevant Acts and Regulations and to ensure that the workplace is safe and without risks to health.

The promotion and maintenance of occupational health and safety is primarily the responsibility of management. Management at all levels will take various measures to ensure the health and safety of all persons in the workplace.

Lost time due to injury was:

- 2004/5 nil
- 2005/2006 nil
- 2006/2007 2hrs
- 2007/2008 nil

No. of Workers' Compensation Claims:

- 2004/2005 nil
- 2005/2006 nil
- 2006/2007 1 and
- 2007/2008 1

4.1.2 Dam Safety

CTW owns Lake Rowlands and Bogolong Dams.

Lake Rowlands

Lake Rowlands is a prescribed dam under schedule 1 of the Dam Safety Act 1978 and as such is subject to the recommendations of the dam safety committee and DWE. The 2006 DWE audit report identified 13 recommendations.

All recommendations in regards to the 2006 and 2007 DWE audit have been completed with the exception of the Dam Safety Emergency Plan which has been prepared by consultants GHD and is in draft form for review and comment.

Bogolong Dam

Bogolong Dam is not in schedule 1 described above and so is subject to DWE review only. In 2006 NSW department of commerce performed a Dam Break Study and which rated the risk as low.

Bogolong Dam has been given a low hazard rating and as a result the Dam Safety Committee has passed the responsibility of this dam to CTW. The dam no longer requires inspection by DWE.

4.1.3 Water Quality

As a water supply Local Water Utility under the Local Government Act CTW has responsibility to supply water to its customers. Under the NSW Public Health Act 1991 and The Fluoridation of Public Water Supplies Act 1957 The NSW Department of Health (DoH) provides analysis and advice and may order rectification or closure of a water supply. DWE provides technical advice to LWUs on operation and upgrade of water systems.

To address Australian Drinking Water Guidelines DoH provides "Drinking Water Monitoring Program (2005)" which defines what should be sampled and the minimum frequency.

This analysis covers a number of parameters (including bacteriological and fluoridation).

For the 2005/6 year there was 100% compliance with physical, chemical and bacteriological water quality requirements (Source DWE TBL performance Report). The 2007/8 Management Plan shows Levels of Service (below) indicate issues in coliform levels.

4.1.4 Water Extraction Licensing

CTW holds DWE water extraction licenses for its water sources under the NSW Water management Act 2000 and Water Act 1912. Water extracted from rivers and boreholes must be monitored under DWE's NSW Water Extraction Monitoring Policy (2007). CTW is required to meet all licence requirements.

The CTW main water sources are identified in Technical Note 3, Table 2.

CTW has met all its licence conditions under these licences for the past three years.

4.2 Contractual

CTW has a supply agreement to supply water to Cowra Shire Council. This is described in Technical Note 3.

4.3 Levels of Service

Table CTW2: CTW summary of LOS for water supply

Description	Unit	Current Level of Service	Target Level of Service
Normal Quantity Available:			
Domestic peak day	L/tenement/d	3000	3000
Domestic annual	L/tenement/y	254	254
Total Annual Average Consumption	ML/y	2110	2110
Total Peak Daily Consumption (Potable)	ML/d	16	16
Peak/Average consumption	%	211	211
Fire Fighting: Compliance with Water Supply Investigation Manual (AS2419.1)	% urban area serviced	100	100
Pressure:			
Min. pressure when delivering 15 L/min	Metres head	12	20
Max. static pressure	Metres head	90	60
Flow Rates:			
Domestic(non-rural consumers)	Litres/min	15	25
Rural	Litres/min	6.3	6.3

Description	Unit	Current Level of Service	Target Level of Service
Consumption Restrictions in Droughts:			
Level of restriction applied through a repeat of the worst drought on record			
❒ Average duration of restrictions	% of normal usage	0	0
❒ Average frequency of restrictions	Number/10 yr period	1	0
Supply Interruptions to Consumers:			
Planned (95% of the time)			
Notice given to domestic customers:	Hours	48	48
Notice given to commercial customers:	Hours	48	48
Notice given to Major industrial and institutional customers:	Days	7	7
Unplanned:			
Maximum duration:	Hours	12	12
Frequency:	Number/yr/customer	2	<2
Supply Failure: Priority 1 (Defined as failure to maintain continuity or quality of supply to a large number of customers or to a critical use at a critical time)			
During Working Hours:	Hours	1	1
Out of working hours:	Hours	2	2
Customer Complaints:			
❒ Personal/Oral:	Working days	5	5
❒ Written:	Working days	10	10
Note: times apply for 95% of occasions.			

Description	Unit	Current Level of Service	Target Level of Service
Service Provision:			
Time to provide a domestic individual connection to water supply in serviced areas (95%)	Working days	10	10
Water Quality			
(Should meet Drinking Water Quality Guidelines of Australia, NH&MRC 2004)			
Microbiological parameters:			
Total Coliforms	CFU/100ml	100	100
Thermo tolerant Coliforms	CFU/100ml	100	100
Sampling frequency	Samples/month	4	4
Physico-chemical Parameters:			
pH	Unit	7.5	7.5
Turbidity	NTU	<1	<1
Fluoride	mg/L	1	1
Free available chlorine (WTP)	mg/L	-	-
Free available chlorine (Reticulation)	mg/L	0.6	0.6
Sampling frequency	Samples/yr	365	365
Percentage Compliance with 1996 NH&MRC/AWRCM Australian Drinking Water Quality Guidelines:			
Physical parameters	%	100	100
Chemical parameters	%	100	100
Total coliform	%	98	100
Thermo-tolerant coliforms	%	98	100

Source: 2007 CTW Management Plan

Potential Issue: Target levels were more stringent than current performance for the following Levels of service:

- **Min. pressure when delivering 15 L/min needs to be improved from 12 to 20m head.**
- **Max. static pressure needs to be reduced from 90 to 60m head.**
- **Flowrates for domestic (non rural consumers) needs to be increased from 15 to 25 litres/min.**
- **Average frequency of restrictions applied through a repeat of the worst drought on record needs to be reduced from 1/10yr period to none.**
- **The maximum frequency of unplanned consumer disruptions needs to be reduced from 2/yr/customer to less than 2.**
- **Compliance with 1996 ADWG needs to increase from the current 98% percent to 100% for:**
  - **Total Coliforms**
  - **Thermo tolerant Coliforms**

4.4 Community Preference

To be developed at the PRG meeting.

5 Cabonne Shire Council

Cabonne Shire Council (CSC) is responsible for water, wastewater and stormwater.

Table W1: Cabonne Summary of Obligation Related Issues

Obligation	Status/ Issues
Regulatory	Wastewater: See Technical Note 4C Stormwater: See Technical Note 4C OH&S (see section 5.1.1) Dam Safety (see section 5.1.4) Water extraction (see section 5.1.3) Water Quality (see section 5.1.2)
Contractual	No contractual obligations have been identified (see section 5.2)
Levels of Service	Covered below (see section 5.3)
Best Practice Management	See Technical Note 4C
Community Preference	Project Reference Group (PRG) to advise

5.1 Regulatory

5.1.1 OH&S

Data gap: CSC OH&S plan and performance

5.1.2 Water Quality

As a water supply Local Water Utility under the Local Government Act CSC has responsibility to supply water to its customers. Under the NSW Public Health Act 1991 and The Fluoridation of Public Water Supplies Act 1957 The NSW Department of Health (DoH) provides analysis and advice and may order rectification or closure of a water supply. DWE provides technical advice to LWUs on operation and upgrade of water systems.

To address Australian Drinking Water Guidelines DoH provides "Drinking Water Monitoring Program (2005)" which defines what should be sampled and the minimum frequency.

This analysis covers a number of parameters (including bacteriological and fluoridation).

For the 2005/6 year there was 100% compliance with physical, chemical and bacteriological water quality requirements (Source DWE TBL performance Report).

5.1.3 Water Extraction Licensing

CSC holds DWE water extraction licenses for its water sources under the NSW Water management Act 2000 and Water Act 1912. Water extracted from rivers and boreholes must be monitored under the DWE NSW Water Extraction Monitoring Policy (2007). CSC is required to meet all licence requirements.

CSC's main water sources are identified in Technical Note 3.

Council staff have advised that CSC has met all its licence conditions under these licences for the past three years.

CSC is in the process of applying for a bore extraction licence in Molong. The water will be used for watering parks and playing fields.

5.1.4 Dam Safety

CSC owns Molong and Borenore dams. Both these dams are prescribed dams under the NSW Dam Safety Act 1978 Schedule1 and are subject to the Dam Safety Committee.

A dam safety and emergency plan was developed for Molong Creek Dam in 2002.

Data gap: Status of DSC and DWE actions regarding Molong Creek and Borenore Dams.

5.2 Contractual

There are no known contractual obligations for CSC LWU.

5.3 Levels of Service

The two most recent signed off Cabonne sewerage and water supply scheme strategic business plans are dated February1997. CSC has provided a draft water supply SBP to DWE and this has been used for identifying the target LOS for the water supply schemes. These LOS have not been signed off by Council yet.

5.3.1 Water Supply Scheme

Table CSC2: CSC Draft Target LOS for Water Supply Schemes

	Current LOS (as advised from Council staff)
AVAILABILITY OF SUPPLY	
Pressure: Provide pressures between 22 and 73 meters head of water in the reticulation systems whilst conveying a minimum of 10 liters per minute per residential connection under normal conditions.	Being met

	Current LOS (as advised from Council staff)
Consumption Restrictions in Droughts: ❒ Restrictions should not be applied for longer than 5% of the time. ❒ The water supply system should be able to supply 80% of normal demand (i.e. 20% reduction in consumption) through a repeat of the worst drought on record.	Being met
Peak Day Demand: 5000 L/tenement/day Western Slopes	Unknown
Interruptions to Supply: ❒ Planned: Customers will receive 3 days notice. ❒ Unplanned: Not to occur more than 2 times per year nor last longer than 12hours.	Being met
Water for Fire Fighting: Water will be available from reticulation fire hydrants for fire fighting at minimum flow rates determined by guidelines for specific types of development as set out in Local Government Regulations and the conditions established by the NSW Fire Brigade.	Being met
WATER QUALITY	
Potable Water Supply (Molong and Delgany Estate) The water supplies to Molong and Delgany Estate are to meet the Australian Drinking Water Guidelines.	Being met
Non-Potable Supplies (Cumnock and Yeoval) The water supplies to Cumnock and Yeoval are to meet the Australian Drinking Water Guidelines where practicable. However, there are times when the physical qualities fall below the recommended values in the guidelines. These supplies are chlorinated so as to provide a free chlorine residual throughout the reticulation systems, however, the supplies may fail to meet the microbiological requirements of the guidelines.	Being met
RESPONSE TIME TO CUSTOMER COMPLAINTS OF SUPPLY FAILURE Response time defined as time to have staff on site to commence rectification of problem after notification by public or own staff.	
"Normal" Conditions **Priority 1:** Defined as failure to maintain continuity or quality of supply to a large number of customers or to a critical use at a critical time. ❒ 1hour (during working hours) ❒ 2hours (after working hours)	Being met

	Current LOS (as advised from Council staff)
Priority 2: Defined as failure to maintain continuity or quality of supply to a large number of customers or to a critical use at a non-critical time. ❒ 2hours (during working hours) ❒ 4hours (after working hours)	Being met
Priority 3: Defined as failure to maintain continuity or quality of supply to a single customer. ❒ One working day	Being met
Priority 4: Defined as a minor problem or complaint which can be dealt with at a time convenient to the customer and the water authority. ❒ Within 1 week	Being met
Catastrophe: Any situation of this nature would prompt immediate action involving senior personnel and emergency services with the aim of containing and resolving the situation as quickly as possible.	Council as an Emergency management plan
CUSTOMER COMPLAINTS AND ENQUIRIES OF GENERAL NATURE:	
(i.e., complaints other than supply failure) ❒ Respond to 100% of written complaints or enquiries within 14 days. ❒ Respond to 100% of personal complaints or enquiries within 2days.	Being met
SPECIAL CUSTOMERS: Certain customers may have special needs by virtue of specific health, commercial or industrial circumstances. Each particular case will be treated on its merits. Specific levels of service and associated charges will be negotiated with these customers.	Being met

Source: draft SBP for Water supply schemes 2008

Data gap: Detailed 2008 performance against above draft Levels of Service for Water supply detailed above.

5.3.2 Sewerage

Table CSC3: CSC Draft Target LOS for Sewerage Schemes

	Current LOS (as advised by Council staff)
AVAILABILITY OF SERVICE	
❒ Connections for domestic sewage are provided to all allotments within the defined service area	Being met
❒ Acceptance of commercial and industrial wastes should be in accordance with specific agreements between the sewerage authority and the individual discharger	Council adopted a trade waste policy in early October 2008
Average System Failures: **Controlled:** bypasses of effluent at the sewage treatment works: less than 2/y **Uncontrolled:** surcharging in the reticulation system caused by infiltration and/or blockages: ❒ Private properties: less than 1/ 200 allotments/y ❒ Public property – sensitive areas (e.g. main street): not more than 1/y ❒ Public property – elsewhere: - not more than 1/km main/y	Being met
RESPONSE TIMES TO PRIORITY 1 SYSTEM FAULTS: **Priority 1:** defined as "major failure to contain sewage within the sewer system or any problem affecting a critical user at a critical time": ❒ 1hr (working hours) ❒ 2 hrs (after hours)	Being met
Odours/Vectors: Not more than 2 incidents per year.	Being met
Impact of Sewage Treatment Works on Surrounding Residents: ❒ Noise – les than 29dB above background level ❒ Odour – not detectable outside 200 m around the treatment works	Being met
Effluent Discharge: Comply with DECC pollution licence	See Technical Note 4C. Apparent issues with licence results.
Septic Tank Pump Out Service: Respond to pump out within two days	Being met

	Current LOS (as advised by Council staff)
Customer Complaints and Enquiries of General Nature: (i.e., complaints other than supply failure). ❒ Respond to 100% of written complaints or enquiries within 14 days. ❒ Respond to 100% of personal complaints or enquiries within 2days.	Being met

Source: SBP for Sewerage Schemes 1997

Data gap: Detailed existing 2008 performance against above 1997 Levels of Service for sewerage above

5.4 Community Preference

To be advised in PRG meeting.

Document Control					
Revision	Author	Reviewer	Approved for Issue		
			Name	Signature	Date
2	AFR	ARA	Andrew Fraser	Andrew Fraser	10th November 2008