MWH

BUILDING A BETTER WORLD

NGERS 2008-2009 Submission Summary Report

Prepared for Tweed Shire Council

December 2009

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Tweed Shire Council

NGERS 2008-2009 Submission Summary Report

This document contains information about MWH, particularly about the culture of our organisation and our approach to business, which would be of value to our competitors. We respectfully request, therefore, that it be considered commercially sensitive.

In line with our Quality System, this document has been prepared by Chris Jones and reviewed by Amit Kelovkar and signed off by Amit Kelovkar.

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Tweed Shire Council

NGERS 2008-2009 Submission Summary Report

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Tables

Appendices

In line with our Quality System, this document has been prepared by Chris Jones and reviewed by Amit Kelovkar and signed off by Amit Kelovkar.

1 Introduction

Tweed Shire Council (TSC) has fulfilled their reporting obligations under the National Greenhouse and Energy Reporting Scheme (NGERS) for the reporting year 2008-2009. As such, the processes undertaken to prepare the NGERS submission needs to be documented. The purpose of this report is to document the data, calculations and assumptions associated with the preparation of TSC's NGERS submission.

2 NGERS Report

TSC's NGERS report was submitted in the required two parts (Part A and B). Part A was submitted via the Online System for Comprehensive Activity Reporting (OSCAR) and Part B was submitted as a hard copy to the Greenhouse Energy Data Officer (GEDO). The full NGERS report is provided in Appendix A.

TSC did not trigger a corporate group threshold for the reporting period, however, TSC's facility **Stotts Creek Landfill** triggered the facility threshold of 25 kt CO2-e. As a result, activity data for the Landfill was submitted via OSCAR.

Two errors are shown on the NGERS report which were considered acceptable following discussions with the Department of Climate Change during submission via OSCAR. The Department of Climate Change provided a fact sheet titled *'Known Issues With OSCAR'* (Appendix B) which was used to assess the errors shown on the NGERS report, specifically:

> *"Where validation warnings appear, corporations need to ensure that each validation warning is investigated and resolved if at all possible. Where this is not possible the corporation needs to assure itself that the corporation's data and calculations meet the legislative requirements. If this is the case, disregard message."*

Using the above information it was concluded that the errors were not able to be resolved and was a glitch in the OSCAR program.

3 GHG Emissions Summary

The following facilities were identified as the major sources of greenhouse gas emissions (GHG) that are under TSC's operational control:

- Banora Point Wastewater Treatment Plant (WWTP) and associated pumping networks;
- Stotts Creek Landfill Facility; and
- Other Council assets:
    - Bray Park Water Treatment Plant (WTP) and associated pumping networks;
    - Street lighting;
    - Public barbeques and toilets;
    - Vehicle fleet;
    - Three swimming pools (Kingscliff, Murwillumbah and Tweed Heads);
    - Civic centres (Murwillumbah, Tweed Heads and South Tweed Heads Health and Community Centre);

- Town clocks;
- Emergency service buildings;
- Cemetery;
- Art gallery;
- Sports grounds; and
- Works depots (Murwillumbah and Tweed Heads).

The GHG emissions summary for each of the facilities is provided in Table 3-1.

Table 3-1. Summary of TSC GHG emissions for 2008-2009 reporting period

Facility	GHG Emissions (kt CO2-e)[1]
Banora Point WWTP and associated pumping networks	4.05
Stotts creek landfill	27.48
Bray Park WTP and associated pumping networks	1.04
Streetlighting	2.57
Public barbeques and toilets	0.05
Vehicle fleet	2.97
Swimming pools	0.84
Civic centres	1.41
Town clocks	0.001
Emergency services buildings	0.02
Cemetery	0.08
Art gallery	0.95
Sports grounds	0.20
Works depots	0.20

Notes:
1. The calculations are based on the formulae documented in Section 4 and based on the data generated and provided by TSC.

4 Facility Specific Data Collection and GHG Calculation

The data collection process was undertaken by TSC staff with guidance provided by MWH. An outline of the data collected and GHG calculations for each facility outlined above are provided in the following sections. It should be noted that TSC are in the process of creating systems for data collection in accordance with the NGERS requirements for data collection.

The GHG emissions for each facility were calculated using the Department of Climate Change's *National Greenhouse and Energy Reporting (Measurement) Determination 2008 (as amended)*.

4.1 Banora Point WWTP and associated pumping network

The Banora Point WWTP and associated pumping network produced a total of **4.05 kt CO2-e** of GHG emissions for the reporting period. This total figure is broken down as follows:

- Associated pumping network electricity consumption: 0.315 kt CO2-e
- Banora Point WWTP electricity consumption: 2.709 kt CO2-e
- Banora Point WWTP methane emissions: 0 kt CO2-e
- Banora Point WWTP nitrous oxide emissions: 1.0289 kt CO2-e

The data, calculations and assumptions for the Banora Point WWTP and associated pumping network are provided in the following sections.

4.1.1 Assumptions

The following assumptions were applied:

- WWTP electricity usage is based on electricity invoices;
- WWTP fuel usage was zero due to no fuel usage occurring onsite;
- Individual PS electricity data was not available - consolidated electricity invoice broken down based on knowledge of PS energy requirements;
- No sludge transferred to landfill;
- No methane in sludge biogas transferred out of the plant;
- No methane in sludge biogas flared;
- Data for COD in raw sewage (as determined through sampling) was used to generate an average COD (mg/L) which was multiplied by the total plant flows (as measured during the year) - in place of the formula in Section 5.25(5) (i.e. population served multiplied by a COD per capita default figure) to generate COD in raw sewage entering the plant;
- Quantity of COD removed as sludge was calculated through a mass balance approach – COD_{sl} was determined through the COD_w minus the quantity of COD in effluent leaving the plant (COD_{eff}) (as determined through sampling);
- Only biological oxygen demand (BOD) data were available which was converted to COD using the conversion factor 2.6 (as shown in Section 5.26(2)(b) of the Determination). Average COD in final effluent multiplied by total annual plant flow (as determined through measurement) to determine the quantity of COD in effluent;

- Population served by the WWTP was based on TSC data;
- Data for N in sludge (as determined through sampling) was used to generate an average N in sludge which was multiplied by the quantity of sludge removed to a site otherthan landfill (as determined through measurement) to determine quantity of nitrogen in sludge transferred from the WWTP to a site otherthan landfill; and
- Quantity of nitrogen leaving the plant in effluent during the year was determined through the use of the average nitrogen in final effluent (as determined through sampling) multiplied by total annual plant flow (as determined through measurement).

4.1.2 Data

The data collected for the facility is outlined in Table 4-1.

Table 4-1. Banora Point WWTP and associated pumping network data summary

GHG Source	Facility component		Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assump
Electricity usage	Treatment Plant		Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	3,043,473 kWh	Data based on electricity invoice
	Pump stations (influent and effluent)		Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	353,840 kWh	Individual PS electricity data not available - consolidated electricity invoice broken down l on knowledge of PS energy requirements
Fuel usage	Treatment Plant		No fuel used			TSC advised no fuel used onsite.
Fugitive emissions	Treatment Plant	CH_4	Method 2 (Section 5.26)	Chemical oxygen demand (COD) in wastewater entering the plant during the year measured in tonnes (COD_w)	1011 t	Data for COD in raw sewage (as determined sampling) was used to generate an average (mg/L) which was multiplied by the total plant (as measured during the year) - in place of th formula in Section 5.25(5) (i.e. population ser multiplied by a COD per capita default figure)
				Quantity of COD removed as sludge from wastewater and treated in the plant measured in tonnes of COD (COD_{sl})	990 t	Using a mass balance approach – COD_{sl} was determined through the COD_w minus the qua COD in effluent leaving the plant (COD_{eff}) (as determined through sampling).
				Quantity of COD in effluent leaving the plant during the year (COD_{eff})	20.8 t	Only biological oxygen demand (BOD) data v available which was converted to COD using conversion factor 2.6 (as shown in Section 5. of the Determination).

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assump
					Average COD in final effluent was multiplied annual plant flow (as determined through measurement).
			Fraction of COD anaerobically treated by the plant during the year (F_{wan})	0	managed aerobic treatment factor applied – (
			Quantity of COD in sludge transferred out of the plant and removed to landfill measured in tonnes of COD (COD_{trl})	0	No sludge transferred to landfill.
			Fraction of COD in sludge anaerobically treated by the plant during the year (F_{slan})	0	managed aerobic treatment factor applied – (
			Quantity of methane in sludge biogas captured for combustion for use by the plant during the year (Q_{cap})	0	No methane in sludge biogas captured for combustion
			Quantity of methane in sludge biogas flared during the year by the plant (Q_{flared})	0	No methane in sludge biogas flared.
			Quantity of methane in sludge biogas transferred out of the plant during the year (Q_{tr})	0	No methane in sludge biogas transferred out plant

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assump
		Method 2 (Section 5.32)	Population serviced by the plant during the year	40,421 EP	Population served based on TSC data.
			Quantity of nitrogen in sludge transferred out of the plant and removed to landfill (N_{trl})	0	No sludge removed to landfill
	N_2O		Quantity of nitrogen in sludge transferred out of the plant and removed to a site other than landfill during the year (N_{tro})	0.01606 t	Data for N in sludge (as determined throu sampling) was used to generate an avera sludge which was multiplied by the quant sludge removed to a site otherthan landfi determined through measurement).
			Quantity of nitrogen leaving the plant in effluent during the year (N_{out})	23.6 t	Average N in final effluent (as determine through sampling) multiplied by total ann flow (as determined through measureme

4.1.3 Calculations

The calculations undertaken for the facility are provided below.

4.1.3.1 Electricity consumption emissions

CO_2-e from electricity consumption at the Treatment Plant = 2.709 kt CO_2-e

CO_2-e from electricity consumption at pumpstations = 0.315 kt CO_2-e

$Y = Q \times EF / 1000$

Where,

Y = quantity of emissions measured in CO_2-e tonnes

Q = quantity of electricity purchased from the electricity grid during the year and consumed from the operation of the facility measured in kWh (treatment plant

EF = emission factor in kg CO_2-e per kWh (NSW = 0.89 kg CO_2-e /kWh)

4.1.3.2 Methane emissions at the WWTP

CO_2-e from methane emissions at the WWTP = 0 kt CO_2-e

$$E_j = [CH_4^* - \gamma(Q_{cap} + Q_{flared} + Q_{tr})]$$

E_j	CH_4^*	γ	Q_{cap}	Q_{flared}	Q_{tr}
0	0	0.014246	0	0	0

Where,

E_j = the emissions of methane released by the plant during the year measured in CO2-e tonnes.

CH_4^* = the estimated quantity of methane in sludge biogas released by the plant during the year measured in CO2-e tonnes.

γ = the factor 6.784 × 10-4 × 21 converting cubic metres of methane at standard conditions to CO2-e tonnes.

Q_{cap} = the quantity of methane in sludge biogas captured for combustion for use by the plant during the year measured in cubic metres in accordance with Division 2.3.6

Q_{flared} = the quantity of methane in sludge biogas flared during the year by the plant measured in cubic metres in accordance with Division 2.3.6.

Q_{tr} = the quantity of methane in sludge biogas transferred out of the plant during the year measured in cubic metres in accordance with Division 2.3.6

$CH_4^* =$ **CH_{4gen},** if (Q_{cap} / CH_{4gen} < or = 0.75)

$CH_4^* =$ **($\gamma \times Q_{cap} \times (1/0.75)$),** if $Q_{cap} / CH_{4gen} > 0.75$

$CH_{4gen} =$ the quantity of methane in sludge biogas produced by the plant during the year estimated in accordance with subsection (5) and measured in CO2-e tonnes

$CH4_{gen} = [(COD_w - COD_{sl} - COD_{eff}) \times F_{wan} \times Ef_{wij}] + [(COD_{sl} - COD_{trl} - COD_{tro}) \times F_{slan} \times Ef_{slij}]$

$CH4_{gen}$	COD_w	COD_{sl} [1]	COD_{eff}	F_{wan}	Ef_{wij}	COD_{trl}	COD_{tro}	F_{slan}	Ef_{slij}	y
0	1011	990	20.8	0	5.3	0	990	0	5.3	0.014246

Notes:

1 assumed the difference between tonnage of COD in influent and tonnage of COD in effluent is removed as sludge

where,

COD_w = the chemical oxygen demand (COD) in wastewater entering the plant during the year measured in tonnes

= [Average COD in raw sewage (mg/L)(209 mg/L) * Total plant flow (L/year)(4824777000 L)] * (1*10^-9)(conversion from mg to t)

= 1011 t

COD_{sl} = the quantity of COD removed as sludge from wastewater and treated in the plant measured in tonnes of COD

= Difference between CODw and CODeff

= 990 t

COD_{eff} = the quantity of COD in effluent leaving the plant during the year measured in tonnes

= [Average COD in final effluent (mg/L)(4.31 mg/L) * Total plant flow (L/year)(4824777000 L)] * (1*10^-9)(conversion from mg to t)

= 20.8 t

F_{wan} = the fraction of COD anaerobically treated by the plant during the year

- **managed aerobic treatment: 0**
- unmanaged aerobic treatment: 0.3
- anaerobic digester/reactor: 0.8
- shallow anaerobic lagoon (<2 metres): 0.2
- deep anaerobic lagoon (>2 metres): 0.8

Ef_{wij} = the default methane emission factor for wastewater with a value of 5.3 CO2-e tonnes per tonne COD

COD_{trl} = the quantity of COD in sludge transferred out of the plant and removed to landfill measured in tonnes of COD

= 0

COD_{tro} = the quantity of COD in sludge transferred out of the plant and removed to a site other than landfill measured in tonnes of COD.

= 990 t (CODsl)

F_{slan} = the fraction of COD in sludge anaerobically treated by the plant during the year

- **managed aerobic treatment: 0**
- unmanaged aerobic treatment: 0.3
- anaerobic digester/reactor: 0.8
- shallow anaerobic lagoon (<2 metres): 0.2
- deep anaerobic lagoon (>2 metres): 0.8

Ef_{slij} = the default methane emission factor for sludge with a value of 5.3 CO2-e tonnes per tonne COD (sludge).

4.1.3.3 Nitrous oxide emissions at the WWTP

CO_2-e from nitrous oxide emissions at the Treatment Plant = 1.1408 kt CO_2-e

$$E_i = (N_{in} - N_{trl} - N_{tro} - N_{out}) \times EF_{secii} + N_{out} \times Ef_{disii}$$

E_j	N_{in}	N_{trl}	N_{tro}	N_{out}	Ef_{secij}	Ef_{disij}
1140.764	232.825	0	0.0160605	23.6	4.9	4.9

Where,

E_j = is the emissions of nitrous oxide released from human sewage treated by the plant during the year measured in tonnes of nitrous oxide and expressed in CO2-e tonnes

N_{in} = is the quantity of nitrogen entering the plant during the year measured in tonnes of nitrogen, worked out as follows:

Nin = Protein × FracPr × P

Nin = 220

where

Protein is the annual per capita protein intake in tonnes per person during the year of the population served by the plant (0.036 t/year)

FracPr is the fraction of nitrogen in protein (0.16 tN/t protein)

P is the population serviced by the plant during the year (40,421 persons)

N_{trl} = the quantity of nitrogen in sludge transferred out of the plant and removed to landfill during the year measured in tonnes of nitrogen (0 t)

N_{tro} = the quantity of nitrogen in sludge transferred out of the plant and removed to a site other than landfill during the year measured in tonnes of nitrogen.

= [(average N in sludge (mg/kg)(3.7 mg/kg)) * quantity of sludge removed to a site otherthan landfill (kg)(4,341,000 kg)] * (1*10^-9) (conversion from mg to t)

= 0.01606 t

N_{out} = the quantity of nitrogen leaving the plant in effluent during the year measured in tonnes of nitrogen.

= [Average N in final effluent (mg/L)(4.9 mg/L) * Total plant flow (L/year) (4824777000L)] * (1*10^-9)(conversion from mg to t)

= 23.6

EF_{secij} = the emission factor for wastewater treatment (4.9 t of nitrous oxide measured CO2-e per t of N produced)

EF_{disij} = the emission factor for nitrogen discharge differentiated by the discharge environment (4.9 t N per t of Protein)

4.2 Stotts Creek Landfill Facility

The Stotts Creek Landfill produced a total of **27.481 kt CO2-e** of GHG emissions for the reporting period. This total figure is broken down to:

- Electricity consumption: 0.111 kt CO2-e
- Diesel fuel consumption: 0.24 kt CO2-e
- Methane emissions: 27.13 kt CO2-e

The data, calculations and assumptions for the Stotts Creek Landfill facility are provided in the following sections.

4.2.1 Assumptions

The following assumptions were applied:

- Electricity usage was based on electricity invoice;
- Fuel combustion data was based on invoices;
- Solid waste data for years 1991 – 2009 based on weighbridge data;
- Solid waste data for years prior to 1991 are based on workplace knowledge and population data;
- Data for quantity of landfill gas flared was recorded through the onsite renewable energy facility's flow measuring device – Elster Flow Meter. A total figure was divided equally between the applicable years; and
- Data for quantity of landfill gas captured for combustion was recorded through the onsite renewable energy facility's flow measuring device – Flow Boss 407. A total figure was divided equally between the applicable years.

4.2.2 Data

The data collected for the facility is outlined in Table 4-2.

Table 4-2. Stotts Creek Landfill Facility data summary

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assum
Electricity usage	Landfill Facility	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	124,507 kWh	Data based on electricity invoice
Fuel combustion	Landfill Facility	Method 1 (Section 2.20)	Quantity of fuel	88.94 L (Diesel)	Data based on invoice
Methane emissions	Landfill Facility	Method 1 (Section 5.4)	Solid Waste deposited at landfill for the life of the facility	2009 62.53 kt 2008 55.89 kt 2007 58.18 kt 2006 62.59 kt 2005 65.31 kt 2004 51.39 kt 2003 51.95 kt 2002 52.46 kt 2001 45.92 kt 2000 32.21 kt 1999 29.49 kt 1998 31.63 kt 1997 25.64 kt 1996 26.22 kt 1995 15.05 kt 1994 35.29 kt 1993 34.23 kt 1992 33.97 kt 1991 32.61 kt 1990 31.31 kt	Data for years 1991 – 2009 based on weig data. Data for years prior to 1991 are based on workplace knowledge and population data

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assum
				1989 30.06 kt 1988 28.85 kt 1987 27.70 kt 1986 26.59 kt	
			Quantity of landfill gas that is flared (methane only)	2006 889,609 m^3 2005 889,609 m^3 2004 889,609 m^3 2003 889,609 m^3 2002 889,609 m^3	Data recorded through the onsite renewab energy facility's flow measuring device – E Flow Meter.
			Quantity of landfill gas that is captured for combustion (methane only)	2009 1,087,434.39 m^3 2008 1,087,434.39 m^3 2007 1,087,434.39 m^3	Data recorded through the onsite renewab energy facility's flow measuring device – F Boss 407.

4.2.3 Calculations

The calculations undertaken for the facility are provided below.

4.2.3.1 Electricity consumption emissions

CO_2-e from electricity consumption = 0.111 kt CO_2-e

$Y = Q \times EF / 1000$

Where,

Y = quantity of emissions measured in CO_2-e tonnes

Q = quantity of electricity purchased from the electricity grid during the year and consumed from the operation of the facility measured in kWh (treatment plant

EF = emission factor in kg CO_2-e per kWh (NSW = 0.89 kg CO_2-e /kWh)

4.2.3.2 Fuel combustion

CO_2-e from fuel combustion = 0.24 kt CO_2-e

$E_{ij} = (Q_i \times EC_i \times EF_{ijoxec}) / 1000$

where,

E_{ij} = emissions of gas type (j), being carbon dioxide, methane or nitrous oxide, from each gaseous fuel type (i) released from the operation of the facility during the year measured in CO_2-e tonnes.

Q_i = the quantity of fuel type (i) combusted from the operation of the facility during the year measured in cubic metres or gigajoules.

EC_i = the energy content factor of fuel type (i)

EF_{ijoxec} = the emission factor for each gas type (j) released during the year measured in kilograms CO2-e per gigajoule of fuel type (i)

4.2.3.3 Methane Emissions

CO_2-e from methane emissions = 27.13 kt CO_2-e

Solid waste methane emissions were calculated using the Department of Climate Change's Solid Waste Calculation Tool. A snapshot of the tool with all data entered is shown in Figure 4-1.

It should be noted that, since 1995, Stotts Creek Landfill's operational practices have been, and continue to be, geared towards diverting greenwaste from the landfill through initiatives such as:

- offering kerbside greenwaste collections (TSC has approximately 10,000 green waste services);
- removing greenwaste from landfill face;
- subsidised gate fees for sorted greenwaste loads deposited at the facility which is diverted from landfill; and
- DERM licence conditions preclude greenwaste from landfill.

As a result of Stotts Creek Landfill's operational practices, the default waste mix types for garden waste were not supported and resultantly were recalculated accordingly with the formula provided in Section 5.11 of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008 (as amended).* The revised waste mix types are provided below.

Table 4-3. Original and adjusted waste mix types for Stotts Creek Landfill

ORIGINAL			
Type	Municipal Solid Waste	Commercial	Construction
Food	0.26	0.06	0.00
Paper	0.26	0.55	0.03
Garden	0.10	0.03	0.02
Wood	0.02	0.14	0.06
Textiles	0.04	0.02	0.00
Sludge	0.00	0.03	0.00
nappies	0.06	0.00	0.00
rubber and leather	0.00	0.01	0.00
inert waste	0.26	0.16	0.89

ADJUSTED for no garden waste			
Type	Municipal Solid Waste	Commercial	Construction
Food	0.29	0.06	0.00
Paper	0.29	0.57	0.03
Garden	0.00	0.00	0.00
Wood	0.02	0.14	0.06
Textiles	0.04	0.02	0.00
Sludge	0.00	0.03	0.00
nappies	0.07	0.00	0.00
rubber and leather	0.00	0.01	0.00
inert waste	0.29	0.16	0.91

$$W_{mtuadj} = W_{mtu} + [((W_{mtr} - W_{mtrmax}) \times W_{mtu}) / \Sigma W_{mtu}$$

Where,
W_{mtuadj} is the adjusted percentage for each unrestricted waste mix type.
W_{mtu} is the default percentage for each unrestricted waste mix type in columns 3, 4 and 5 of the table.
W_{mtr} is the default percentage for each restricted waste mix type in columns 3, 4 and 5 of the table.
W_{mtrmax} is the maximum percentage for each restricted waste mix type.
Σ means sum the results for each unrestricted waste mix type.

Relevant section/s of NGER (Measurement) Determination 2008 / IPCC 2006 Guidelines Volume 5	NGER Section 5.5	NGER Section 5.4				NGER Section 5.4/IPCC Equation 3.6		NGER Section 5.4	NGER Section 5.10			NGER Section 5.11									
State/territory (select from drop-down list)	NSW								Waste streams (proportions of total)			Waste mix types - Municipal Solid Waste (proportions of total)									
Financial year ending	Waste to Landfill (kt)	Q_{cap} (m^3)	Q_{flared} (m^3)	Q_{tr} (m^3)		CH_4^* (kt)	CH_{4gen} (kt)	E_i (CO_2-e) (kt)	Municipal Solid Waste	Commercial and Industrial	Construction and Demolition (calculated by deduction)	Food	Paper and paper board	Garden and park	Wood and wood waste	Textiles	Sludge	Nappies	Rubber and Leather	Concrete, metal, plastic and glass (calculated by deduction)
2009	62.53	1,087,434.39	0.00	0.00		2.17	2.17	27.13	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2008	55.89	1,087,434.39	0.00	0.00		2.07	2.07	25.13	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2007	50.16	1,087,434.39	0.00	0.00		1.97	1.97	23.30	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2006	62.59	0.00	889,669	0.00		1.85	1.85	23.53	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2005	65.31	0.00	889,669	0.00		1.70	1.70	20.74	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2004	51.39	0.00	889,669	0.00		1.57	1.57	18.20	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2003	51.95	0.00	889,669	0.00		1.45	1.45	16.05	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2002	52.46	0.00	889,669	0.00		1.33	1.33	13.70	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2001	45.92	0.00	0.00	0.00		1.21	1.21	22.82	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
2000	32.21	0.00	0.00	0.00		1.12	1.12	21.22	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1999	29.49	0.00	0.00	0.00		1.07	1.07	20.22	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1998	31.63	0.00	0.00	0.00		1.01	1.01	19.13	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1997	25.64	0.00	0.00	0.00		0.96	0.96	18.22	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1996	28.22	0.00	0.00	0.00		0.92	0.92	17.45	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1995	15.05	0.00	0.00	0.00		0.90	0.90	17.07	0.3	0.42	0.27	0.29	0.29	0.00	0.02	0.04	0.00	0.07	0.00	0.29
1994	35.29	0.00	0.00	0.00		0.86	0.86	16.30	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1993	24.23	0.00	0.00	0.00		0.77	0.77	14.60	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1992	33.97	0.00	0.00	0.00		0.68	0.68	12.83	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1991	32.61	0.00	0.00	0.00		0.58	0.58	10.99	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1990	31.31	0.00	0.00	0.00		0.48	0.48	9.12	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1989	30.06	0.00	0.00	0.00		0.38	0.38	7.21	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1988	28.85	0.00	0.00	0.00		0.28	0.28	5.24	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1987	27.70	0.00	0.00	0.00		0.17	0.17	3.21	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26
1986	26.50	0.00	0.00	0.00		0.06	0.06	1.19	0.3	0.42	0.27	0.25	0.26	0.10	0.02	0.04	0.00	0.06	0.00	0.26

NGER Section 5.11									NGER Section 5.11									NGER Section 5.11									IPCC Sections 3.2.3, 3.7.2.2	IPCC Sections 3.2.3, 3.7.2.2	IPCC Sections 3.2.3, 3A1.3	IPCC Section 3.2.3
Waste mix types - Commercial and Industry (proportions of total)									Waste mix types - Construction and Demolition (proportions of total)									Weighted waste mix (proportions of total)												
Food	Paper and paper board	Garden and park	Wood and wood waste	Textiles	Sludge	Nappies	Rubber and Leather	Concrete, metal, plastic and glass (calculated by deduction)	Food	Paper and paper board	Garden and park	Wood and wood waste	Textiles	Sludge	Nappies	Rubber and Leather	Concrete, metal, plastic and glass (calculated by deduction)	Food	Paper and paper board	Garden and park	Wood and wood waste	Textiles	Sludge	Nappies	Rubber and Leather	Concrete, metal, plastic and glass (calculated by deduction)	Methane Correction Factor (MCF)	Fraction of DOC that decomposes (DOC$_f$)	Decomposition delay (months) (default is 0)	Fraction of CH_4 in landfill gas (F)
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.57	0.00	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.03	0.06	0.00	0.00	0.00	0.00	0.91	0.12	0.34	0.03	0.08	0.02	0.01	0.02	0.00	0.40	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50
0.06	0.55	0.03	0.14	0.02	0.09	0.00	0.01	0.16	0.00	0.03	0.02	0.06	0.00	0.00	0.00	0.00	0.89	0.11	0.32	0.05	0.08	0.02	0.01	0.02	0.00	0.39	1.0	0.50	0.00	0.50

4.3 Other Council Assets

TSC's other major sources of GHG emissions produced the following amounts of GHG emissions for the reporting period:

- Bray Park WTP and associated pumping networks: 1.04 kt CO2-e
- Street lighting: 2.57 kt CO2-e
- Public barbeques and toilets: 0.05 kt CO2-e
- Vehicle fleet: 2.97 kt CO2-e
- Swimming pools: 0.84 kt CO2-e (Kingscliff: 0.209 kt CO2-e, Murwillumbah: 0.024 kt CO2-e and Tweed Heads: 0.604 kt CO2-e)
- Civic centres: 1.41 kt CO2-e (Murwillumbah: 1.138 kt CO2-e, Tweed Heads: 0.208 kt CO2-e and South Tweed Heads Health and Community Centre: 0.066 kt CO2-e)
- Town clocks: 0.001 kt CO2-e
- Emergency service buildings: 0.021 kt CO2-e
- Cemetery: 0.079 kt CO2-e
- Art gallery: 0.954 kt CO2-e
- Sports grounds: 0.2 kt CO2-e
- Works depots: 0.2 kt CO2-e (Murwillumbah: 0.141 kt CO2-e and Tweed Heads: 0.055 kt CO2-e)

The data, calculations and assumptions for the above facilities are provided in the following sections.

4.3.1 Assumptions

The following assumptions were applied:

- The Bray Park WTP electricity data was based on electricity invoices;
- Vehicle fleet fuel data based on invoices; and
- All other assets' electricity data - specific electricity data not available, therefore, a consolidated electricity invoice was broken down based on knowledge of asset energy requirements and best estimates.

4.3.2 Data

The data collected for the facilities is outlined in Table 4-4.

Table 4-4. Other Council assets data summary

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assum
Electricity usage	Bray Park WTP and associated pumping networks	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	1,166,888 kWh	Data based on electricity invoice
	Street lighting	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	2,885,807 kWh	Data based on electricity invoice
	Public barbeques and toilets	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	60,000 kWh	Specific electricity data not available - consolidated electricity invoice broken dov based on knowledge of asset energy requirements
	Swimming pools	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	941,084 kWh	Data based on electricity invoice
	Civic centres	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	1,586,819 kWh	Data based on electricity invoice
	Town clocks	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	720 kWh	Specific electricity data not available - consolidated electricity invoice broken dov based on knowledge of asset energy requirements
	Emergency service buildings	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	23,808 kWh	Data based on electricity invoice
	Cemetery	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	88,460 kWh	Specific electricity data not available - consolidated electricity invoice broken dov based on knowledge of asset energy

GHG Source	Facility component	Calculation Method (NGER (Measurement) Determination 2008 Reference)	Required Data	Data	Data Collection Methodology / Assum
					requirements
	Art gallery	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	1,071,936 kWh	Data based on electricity invoice
	Sports grounds	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	225,000 kWh	Specific electricity data not available - consolidated electricity invoice broken dov based on knowledge of asset energy requirements
	Works depots	Method 1 (Section 7.2 (1))	kWh of electricity purchased during the reporting period	219,436 kWh	Data based on electricity invoice
Fuel combustion	Vehicle fleet	Method 1 (Section 2.2)	Quantity of fuel	165.53 kL (Petrol) 956.17 kL (Diesel)	Data based on invoice

4.3.3 Calculations

The calculations undertaken for the facility are provided below.

4.3.3.1 Electricity consumption emissions

$Y = Q \times EF / 1000$

Where,

Y = quantity of emissions measured in CO_2-e tonnes

Q = quantity of electricity purchased from the electricity grid during the year and consumed from the operation of the facility measured in kWh (treatment plant

EF = emission factor in kg CO_2-e per kWh (NSW = 0.89 kg CO_2-e /kWh)

4.3.3.2 Fuel combustion

$E_{ij} = (Q_i \times EC_i \times EF_{ijoxec}) / 1000$

where,

E_{ij} = emissions of gas type (j), being carbon dioxide, methane or nitrous oxide, from each gaseous fuel type (i) released from the operation of the facility during the year measured in CO_2-e tonnes.

Q_i = the quantity of fuel type (i) combusted from the operation of the facility during the year measured in cubic metres or gigajoules.

EC_i = the energy content factor of fuel type (i) (Diesel – 38.6 GJ/kL, Petrol – 34.2 GJ/kL)

EF_{ijoxec} = the emission factor for each gas type (j) released during the year measured in kilograms CO2-e per gigajoule of fuel type (i) (Diesel: CO_2 – 69.2 kg CO_2-e/GJ, CH_4 – 0.2 kg CO_2-e/GJ, N_20 – 0.5 kg CO_2-e/GJ) (Petrol: CO_2 – 66.7 kg CO_2-e/GJ, CH_4 – 0.6 kg CO_2-e/GJ, N_2O – 2.3 kg CO_2-e/GJ)

5 Assessment of Uncertainty

Assessment of uncertainty, for Scope 1 emissions, is required to be undertaken in accordance with Chapter 8 of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008 (as amended).* Uncertainty should be assessed so that the range for an emissions estimate encompasses the actual amount of the emissions with 95% confidence.

The Department of Climate Change's *National Greenhouse and Energy Reporting Guidelines* (2008) outlines that assessment of uncertainty is not required to be documented and therefore has not been included here. MWH can assist TSC in the future if assessment of uncertainty is required by the GEDO.

6 References

Department of Climate Change, 2008. *National Greenhouse and Energy Reporting Guidelines.* Commonwealth of Australia. Canberra.

Department of Climate Change, 2009. *National Greenhouse and Energy Reporting (Measurement) Determination 2008 – as amended*. Commonwealth of Australia. Canberra.

Appendix A

TSC NGERS Report

Australian Government
Department of Climate Change

Tweed Shire Council
Not Required
ABN: 90 178 732 496
R090616-00258

NATIONAL GREENHOUSE AND ENERGY REPORT

Tweed Shire Council

FOR THE REPORTING PERIOD 01/07/2008 - 30/06/2009

PART A

Reporting under the National Greenhouse and Energy Reporting (NGER) Act 2007

A registered corporation is to submit Part A and B report components, which together comprise the National Greenhouse and Energy Report (the Report), in accordance with section 19 of the NGER Act and regulation 4.02 of the NGER Regulations. This Report contains information in relation to the greenhouse gas emissions, energy production and energy consumption from the operation of facilities under the operational control of the registered corporation or members of the corporation's group during the reporting period.

If this Report is being submitted by an "other person" as declared by the Greenhouse and Energy Data Officer under s.20 of the NGER Act, the Report only needs to contain the s.19 information that is not in the possession or under control of the registered corporation.

This Report must contain any information specified by the NGER legislation, and data used to compile the Report must be based on the methods specified in the NGER (Measurement) Determination 2008.

Submitting the Report

This Report is only valid when Part B has been completed in Online System for Comprehensive Activity Reporting (OSCAR) and a printed and signed Part A has subsequently been received by the Greenhouse and Energy Reporting Office. The Part A report is only to be signed after Part B has been completed in OSCAR. If the information provided at Part B has been altered after the signing of Part A, the Report will no longer be valid. To ensure that a valid Report has been provided, please check that the version designated (in the footer of the report) on Part A corresponds with that on Part B. A hardcopy version of Part B does not need to be sent along with the signed Part A.

CORPORATION DETAILS

Controlling Corporation Name:	**Tweed Shire Council**
ABN:	**90 178 732 496**
Chief Executive Officer (or equivalent):	**Mr Mike Rayner**

Corporation Head Office Street Address:

Civic Centre, Tumbulgum Road
MURWILLUMBAH, NSW 2484

Corporation Postal Address:

PO Box 816
MURWILLUMBAH, NSW 2484

Australian Government
Department of Climate Change

Tweed Shire Council
Not Required
ABN: 90 178 732 496
R090616-00258

CEO (or equivalent) details:

Name: Mr Mike Rayner
Position: General Manager
Address: PO Box 816
MURWILLUMBAH, NSW 2484
Phone: 0266702415
Email: miker@tweed.nsw.gov.au

Contact Person details:

Name: Mr Dan Walton
Position: Sustainability Programme Leader
Address: PO Box 816
MURWILLUMBAH, NSW 2484
Phone: 0266702555
Email: danw@tweed.nsw.gov.au

GREENHOUSE GAS EMISSIONS AND ENERGY TOTALS FOR THE REPORTING PERIOD 01/07/2008 - 30/06/2009

The table below reports total scope 1 and scope 2 greenhouse gas emissions (GHG), energy produced and energy consumed by the corporate group as reported in detail in Part B of this Report.

GHG EMISSIONS			ENERGY	
Scope 1 (t CO_2-e)	Scope 2 (t CO_2-e)	Total of Scope 1 and Scope 2 (t CO_2-e)	Energy Consumed (GJ)	Energy Produced (GJ)
27,366	111	27,476	3,881	40,996

This report contains data that has been measured using the following methods as outlined in the National Greenhouse and Energy Reporting (Measurement) Determination 2008

Method 1 Known as the default method, derived from the National Greenhouse Accounts methods and is based on national average estimates

STATEMENTS

Any statements below are system generated for Reports prepared under certain provisions in the NGER legislation.

Facility threshold met:

The corporate group of Tweed Shire Council has not met a corporate group threshold, but members of the corporate group have had operational control of one or more facilities during the reporting period that have met a facility threshold as defined in section 13 (1)(d) of the NGER Act. Regulation 4.02(3)(b) only requires this Report to include information under Divisions 4.3 to 4.5 of the NGER regulations for the facilities that cause the facility threshold to be met.

VALIDATION WARNINGS

This report contained 2 unresolved warnings listed in Part B of the Report.

Australian Government
Department of Climate Change

Tweed Shire Council
Not Required
ABN: 90 178 732 496
R090616-00258

PRIVACY STATEMENT

Personal Information
Under the NGER Act and the NGER Regulations, the Greenhouse Energy Data Officer (the GEDO) and authorised staff have the authority to collect information which may include personal information as defined by the Privacy Act 1988 (Cth).
"Personal information", as defined in the Privacy Act, means any information from which a person's identity is apparent or can be reasonably ascertained.
In compliance with the Privacy Act, the Greenhouse and Energy Reporting Office of the Department of Climate Change has appropriate measures in place to ensure that personal information is protected. Measures include procedures and systems for the receipt, management and storage of personal information and ongoing monitoring of these arrangements.

Disclosure of information
The GEDO and authorised staff are only able to disclose greenhouse and energy information (which may include personal information) in accordance with the NGER Act or as otherwise required by law.
Information may be disclosed for the following purposes:
• administering a program or collecting statistics relating to greenhouse gas emissions, energy consumption or energy production;
• in connection with court or tribunal proceedings, or proposed or possible court or tribunal proceedings under the NGER Act;
• facilitating reviews of Australia's compliance with its international obligations relating to reporting of greenhouse gas emissions, consumption of energy or production of energy; and
• streamlining State and Territory programs in accordance with the objectives of the NGER Act.

The full Privacy Statement for the Department of Climate Change is available online at http://www.climatechange.gov.au/statements/privacy.html.
If you have further questions on privacy of information collected under the NGER Act, please contact the Greenhouse and Energy Reporting Office on 1800 018 831.

DECLARATION

The CEO (or equivalent) should read the following declaration and sign below

The NGER legislation mandates that registered corporations or "other persons" declared under s.20 of the NGER Act ("reporting entity's") provide complete and accurate information. It is the reporting entity's responsibility to ensure that information that may or may not be provided in the Report has been calculated in accordance with the NGER legislation.

Under the NGER Act and NGER Regulations, it is the responsibility of the reporting entity to provide the necessary information in their Report even if someone else assists it in preparing that data.

Australian Government
Department of Climate Change

Tweed Shire Council
Not Required
ABN: 90 178 732 496
R090616-00258

In order to assist reporting entities to comply with their reporting obligations under the NGER Act and NGER Regulations, the Commonwealth has developed the National Greenhouse and Energy Reporting Guidelines (the Reporting Guidelines). The Reporting Guidelines can be used in conjunction with the NGER Technical Guidelines, which were developed to assist stakeholders understand and apply the NGER (Measurement) Determination 2008.

It should be noted that neither the Reporting Guidelines nor the NGER Technical Guidelines constitute legal advice. Reporting entities are encouraged to seek independent advice to find out how the NGER Act and its subordinate legislation applies, as it is the responsibility of each reporting entity to satisfy its statutory obligations.

Reporting entities should not use OSCAR as a substitute for undertaking their own independent review of the information provided in their Reports. OSCAR has some inbuilt checking mechanisms designed to assist reporting entities to submit valid Reports. These checks should not be relied upon to ensure that the data that has been entered into OSCAR, including corporate group structure, is correct and in accordance with the legislative requirements of the NGER Act.

Under sections 19 and 20 of the NGER Act, a reporting entity who fails to provide a Report in compliance with its obligations could be liable for a civil penalty of up to 2,000 penalty units (under the Crimes Act 1914, a penalty unit is equal to $110). Under section 30 of the NGER Act, a reporting entity may be liable for an additional civil penalty for each day on and after the due date of the Report.

In accordance with section 22 of the NGER Act, a reporting entity is required to maintain records of the activities that it is responsible in order to demonstrate that it has complied with its obligations under the NGER legislation. Records should be retained for a period of 7 years from the end of the year in which the activities took place. Failure to comply with this directive could be punishable by up to 1,000 penalty units.

By signing below, the Chief Executive Officer (or equivalent) as identified above acknowledges the above declaration and that:

• Parts A and B of this Report are being provided by the identified reporting entity in accordance with the NGER legislation;
• either
– this Report is required for the registered corporation's trigger year (within the meaning of subsections 12(1) or (3) of the NGER Act);
or
– the corporation was a registered corporation at the end of the financial year to which the Report relates; or
– the Report is being provided by an "other person" as declared by the GEDO under s.20 of the NGER Act;
• the validation warnings identified in this Report have been noted;
• the information supplied in Parts A and B of this Report is current, correct and in accordance with the NGER Act 2007, NGER Regulations 2008 and NGER (Measurement) Determination 2008; and
• under Division 137 of the Criminal Code it may be an offence to provide false or misleading information or documents to the GEDO in purported compliance with this Act.

Name of CEO or equivalent (In Full) _____

Signature of CEO or equivalent _____

Date _____

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Tweed Shire Council
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ABN: 90 178 732 496
R090616-00258

Once signed, a copy of Part A should be kept for your records. The original Part A should be sent by post so that it is received by the GEDO, at the following address, before your reporting due date. A hardcopy version of Part B does not need to be sent with Part A.

Post: Greenhouse and Energy Data Officer
NGER Office
Department of Climate Change
GPO Box 854
CANBERRA ACT 2601

After the signed copy of Part A is received by the Greenhouse and Energy Reporting Office, the primary contact will be sent a written receipt confirmation that the Report has been received in full.

Australian Government
Department of Climate Change

Tweed Shire Council
Not Required
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R090616-00258

NATIONAL GREENHOUSE AND ENERGY REPORT

Tweed Shire Council

FOR THE REPORTING PERIOD 01/07/2008 - 30/06/2009

PART B

Head Office Postal Address:

PO Box 816
MURWILLUMBAH, NSW 2484

Head Office Street Address:

Civic Centre, Tumbulgum Road
MURWILLUMBAH, NSW 2484

Reporting under the National Greenhouse and Energy Reporting (NGER) Act 2007

A registered corporation is to submit Part A and B report components, which together comprise the National Greenhouse and Energy Report (the Report), in accordance with section 19 of the NGER Act and regulation 4.02 of the NGER Regulations. This Report contains information in relation to the greenhouse gas emissions, energy production and energy consumption from the operation of facilities under the operational control of the registered corporation or members of the corporation's group during the reporting period.

If this Report is being submitted by an other person as declared by the Greenhouse and Energy Data Officer under s.20 of the NGER Act, the Report only needs to contain the s.19 information that is not in the possession or under control of the registered corporation.

This Report must contain any information specified by the NGER legislation, and data used to compile the Report must be based on the methods specified in the NGER (Measurement) Determination 2008.

Submitting the Report

Part B of this Report is to be completed in the Online System for Comprehensive Activitiy Reporting (OSCAR), however the Report is not valid until a printed Part A report is subsequently signed and received by the Greenhouse and Energy Reporting Office. The Part A report is only to be signed after Part B has been completed in OSCAR. If the information provided at Part B has been altered after the signing of Part A, the Report will no longer be valid. To ensure that a valid Report has been provided, please check that the version designated on Part A corresponds with that on Part B. A hardcopy version of Part B does not need to be sent along with the signed Part A.

NB: If a registered corporation does not meet a threshold under section 13 of the NGER Act, the data tables in this report will be blank, but group member and facility details will be included with a statement to satisfy legislative requirements.

GREENHOUSE GAS EMISSIONS AND ENERGY TOTALS FOR THE REPORTING PERIOD

The tables below report total scope 1 and scope 2 greenhouse gas emissions (GHG), energy consumed and energy produced by the corporate group if a s.13 threshold is met for the reporting period.

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	GHG EMISSIONS			ENERGY	
	Scope 1 (t CO_2-e)	Scope 2 (t CO_2-e)	Total of Scope 1 and Scope 2 (t CO_2-e)	Energy Consumed (GJ)	Energy Produced (GJ)
Actual	27,366	111	27,476	3,881	40,996
% Value Converted to Value	0	0	0	0	0
Corporation Total:	27,366	111	27,476	3,881	40,996

GHG Scope 1 Emission By Gas (t CO_2-e)						
CO_2 Carbon dioxide	CH_4 Methane	NO_2 Nitrous oxide	Perfluorocarbon CF_4 Tetrafluoro methane	Perfluorocarbon C_2F_6 Hexafluoro ethane	SF_6 Sulphur hexafluoride	HFCs Hydro fluorocarbons
238	27,127	1	0	0	0	0

REPORTING SMALLER FACILITIES BY ESTIMATING EMISSIONS AND ENERGY (Reg. 4.26)

Smaller facilities that are below GHG emissions or energy levels defined in regulaton 4.26 can be reported as an estimated percentage of the corporate group's totals. The values of GHG emissions and energy reported under this regulation are based on the following percentage estimates. GHG emissions and energy data is not required to be reported elsewhere for facilities that are reported under this regulation.

Number of facilities reported as %	GHG Emissions (%)	Energy Produced (%)	Energy Consumed (%)
0	0	0	0

This report contains data that has been measured using the following methods as outlined in the NGER (Measurement) Determination 2008:

Method 1 Known as the default method, derived from the National Greenhouse Accounts methods and is based on national average estimates

STATEMENTS

Any statements below are system generated for Reports prepared under certain provisions in the NGER legislation.

Facility threshold met:

The corporate group of Tweed Shire Council has not met a corporate group threshold, but members of the corporate group have had operational control of one or more facilities during the reporting period that have met a facility threshold as defined in section 13 (1)(d) of the NGER Act. Regulation 4.02(3)(b) only requires this Report to include information under Divisions 4.3 to 4.5 of the NGER regulations for the facilities that cause the facility threshold to be met.

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CORPORATE STRUCTURE (TABLE OF CONTENTS)

Document Reference Number	Entity Name
1	Stotts Creek Landfill

CEO (or equivalent) details:

Name: Mr Mike Rayner
Position: General Manager
Address: PO Box 816
MURWILLUMBAH, NSW 2484

Phone: 0266702415
Email: miker@tweed.nsw.gov.au

Contact Person details:

Name: Mr Dan Walton
Position: Sustainability Programme Leader
Address: PO Box 816
MURWILLUMBAH, NSW 2484

Phone: 0266702555
Email: danw@tweed.nsw.gov.au

1. Facility - Stotts Creek Landfill

The following tables summarise greenhouse gas emissions and energy data for this facility during the reporting period.

GHG EMISSIONS			ENERGY	
Scope 1 ($t CO_2-e$)	Scope 2 ($t CO_2-e$)	Total of Scope 1 and Scope 2 ($t CO_2-e$)	Energy Consumed (GJ)	Energy Produced (GJ)
27,366	111	27,476	3,881	40,996

GHG Scope 1 Emission By Gas ($t CO_2-e$)						
CO_2 Carbon dioxide	CH_4 Methane	NO_2 Nitrous oxide	Perfluorocarbon CF_4 Tetrafluoro methane	Perfluorocarbon C_2F_6 Hexafluoro ethane	SF_6 Sulphur hexafluoride	HFCs Hydro fluorocarbons
238	27,127	1	0	0	0	0

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ABN: 90 178 732 496
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Facility Details

Operational Control: Tweed Shire Council has operational control over this facility.
Facility Street Address: Leddays Creek Road STOTTS CREEK, NSW 2487
Geographic Coordinates: 28.292°S, 153.493°E
Region: NSW
ANZSIC Code: 292
Division: Electricity, Gas, Water and Waste Services
Subdivision: Waste Collection, Treatment and Disposal Services
Group: Waste Treatment, Disposal and Remediation Services
Class:
Number of days with Operational Control: 365

Facility Data

GREENHOUSE GAS EMISSIONS

Scope 1

Source Name	Activity Data Name	Activity Data Context Name	Criteria	Amount	Units	Energy Content Factor	Energy Content	Emission Factors	Gases	Method	Scope1 t CO_2-e Carbon Dioxide Equivalent.
Other Stationary	Diesel Oil	Non-transport	A	88.94	kL	38.6	3433.084	69.2	CO_2	Method 1	238
								0.1	CH_4	Method 1	0
								0.2	NO_2	Method 1	1
										TOTAL:	239

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Greenhouse Gas Emissions

Solid waste disposal on land

Activity type	Activity context	Criteria	Amount	Unit	Gas	Method	Total t CO_2-e Carbon Dioxide Equivalent.
Emissions released from landfills (other than flaring of methane)	Waste		N/A	N/A	CH_4	Method 1	27,127
						TOTAL:	27,127

Source Information

Name	Entered Amount	Unit
Years of Operation	24	
Average Annual amount of disposal of solid waste	38459	tonnes
Waste entering landfill	62530	tonnes
Waste entering landfill from municipal sources	19384	tonnes
Waste entering landfill from commercial and industrial sources	26263	tonnes
Waste entering landfill from construction sources	16883	tonnes
Methane captured for combustion	737.72	tonnes
Methane flared	0	tonnes
Methane captured and transferred off site	0	tonnes
Month in which decay process commences	7	

Name	Municipal (%)	Commercial & Industrial (%)	Construction (%)
Food	29	6	0
Paper	29	57	3
Garden	0	0	0
Wood	2	14	6
Textiles	4	2	0
Sludge	0	3	0
Nappies	7	0	0
Rubber & Leather	0	1	0
Concrete, Metal, Plastic & Glass	29	16	91
Total:	100	99	100

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Department of Climate Change

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Scope 2

Source Name	Activity Data Name	Activity Data Context Name	Criteria	Amounts	Units	Scope2 t CO_2-e Carbon Dioxide Equivalent.
Energy commodities	Electricity	Energy commodity		124,507	kWh	111
					TOTAL:	111

ENERGY PRODUCTION

Electricity Production

Methods of Production	Criteria	Produced for the operation of the facility	Units	Produced for use outside the operation of the facility	Units	Produced for supply to an electricity transmission or distribution network	Units	Converted Amount (GJ)
Electricity (biogas generation)						0.000	kWh	0
							TOTAL:	0

Other Energy Production

Energy Type	Criteria	Amount	Units	Converted Amount
Landfill biogas that is captured for combustion (methane only)		1,087,434.39	m^3	40,996
			TOTAL:	40,996

ENERGY CONSUMPTION

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ABN: 90 178 732 496
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Energy consumed by means of combustion for a purpose other than producing electricity, producing a chemical or metal product or for transport

Source Name	Activity Type	Activity type context	Usage	Criteria	Amount	Units	Energy Content Factor	Converted Amount
Other Stationary	Diesel Oil	Non-transport	Combusted	A	88.94	kL	38.6	3,433
							TOTAL:	3,433

Energy consumed by means other than combustion

Source Name	Activity Type	Activity type context	Usage	Criteria	Amount	Units	Energy Content Factor	Converted Amount
Energy commodities	Electricity	Energy commodity	Combusted		124,507	kWh	0.004	448
							TOTAL:	448

Summary Table

Categories	Converted Amount	Units
Amount of energy consumed by means of combustion	3,433	GJ
Energy consumed by means other than combustion	448	GJ
TOTAL:	3,881	GJ

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UNCERTAINTY LEVELS

Chapter 8 of the NGER (Measurement) Determination requires uncertainty to be assessed for emissions estimates so that a range for statistical uncertainty is provided within a 95% confidence level. The NGER Act and Regulations do not currently require uncertainty to be reported, however GHG Protocols require the assessment of uncertainty of emissions estimates. Calculations made to determine uncertainty may be reported in the "Comments" tab within OSCAR.

The NGER Determination currently sets out the uncertainty levels for emissions factors under Method 1 reporting, and ongoing refinements of the Determinations will include uncertainty levels for activities and energy content to enhance Method 1 calculations. If there are no specific guidelines in the determination, uncertainty of emissions estimates is to be assessed in accordance with the GHG protocol guidance on uncertainty assessment in the GHG inventories and calculating statistical parameter uncertainty (September 2003). Further guidance on calculating uncertainty is provided in the NGER (Measurement) Determination.

ADDITIONAL INFORMATION

Any further information you may wish to provide can be added to the "Comments" tab in OSCAR. Information provided may or may not be used by the GEDO and authorised staff, and will only be used in accordance with the NGER Act or as otherwise required by law.

VALIDATION WARNINGS

This Report contains 2 unresolved warnings which are listed below:

Entity Name	TOC ID	Entity Type	Status	Source / Activity type	Validation Message
Stotts Creek Landfill	1	Facility		Solid waste disposal on land	Mandatory source data has not been entered in the "Other Source Data" tab at the facility entity
Stotts Creek Landfill	1	Facility		Solid waste disposal on land	Optional data required to perform a calculation have not been entered in the "Other Source Data" tab at the facility entity

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NATIONAL GREENHOUSE AND ENERGY REPORT

Tweed Shire Council

FOR THE REPORTING PERIOD 01/07/2008 - 30/06/2009

PART C

HEAD OFFICE POSTAL ADDRESS:

PO Box 816
MURWILLUMBAH, NSW 2484

HEAD OFFICE STREET ADDRESS:

Civic Centre, Tumbulgum Road
MURWILLUMBAH, NSW 2484

CEO: **Mr Mike Rayner**

Address: **PO Box 816**
MURWILLUMBAH, NSW 2484

Phone: **0266702415**

Email: **miker@tweed.nsw.gov.au**

Contact Person: **Mr Dan Walton**

Position: **Sustainability Programme Leader**

Address: **PO Box 816**
MURWILLUMBAH, NSW 2484

Phone: **0266702555**

Email: **danw@tweed.nsw.gov.au**

STATEMENT:

Tweed Shire Council wishes to include as part of its National Greenhouse and Energy Report the following 0 attachments:

No.	File Name	Description

Appendix B

Known Issues with OSCAR document

KNOWN ISSUES WITH OSCAR www.oscar.gov.au

The Department has identified a number of issues with OSCAR that may impact on the 20008/09 NGER report.

The issues known to date and approved workarounds for 2008/09 reporting year are detailed below.

We apologise for any inconvenience caused as a result of these issues. We are working on addressing these issues and implementing further enhancements to OSCAR for the 2009/10 reporting year.

For assistance call the Greenhouse and Energy Reporting Office on 1800 018 831 in the first instance or email your query to reporting@climatechange.gov.au.

#	ISSUE	APPROVED WORKAROUND
1	Decommissioned underground mine - When using Method 1 to report fugitive methane emissions, OSCAR will not save this entry unless you select Method 4 for CO_2.	Complete your report by selecting Method 4 to report zero emissions for CO_2 and select Method 1 to report fugitive methane emissions. Include a note in an attachment, or in the 'comments' field when generating your NGER report, that specifies that 'Method 4 has not been used for the activity of fugitive emissions from decommissioned underground mines, rather entry was required due to system issue'.
2	N_2O incorrectly listed as NO_2 in all tables.	Ignore, this should be N_2O
3	Percentage report screen only allows a maximum of 99 facilities to be recorded. User is unable to enter a 3 digit number.	Where 99 facilities is exceeded, enter 99 and when generating your NGER report, in the 'comments' field, identify the actual number of facilities reported as a percentage, e.g. 105.
4	Validation warnings	Where validation warnings appear, corporations need to ensure that each validation warning is investigated and resolved if at all possible. Where this is not possible the corporation needs to assure itself that the corporation's data and calculations meet the legislative requirements. If this is the case, disregard message. The OSCAR validation functions explain the validation warning and direct reporters to the source of the warning. Validation messages are a guide to corporations to check their entry of entity information, and emissions and energy data, to ensure that their report meets the legislative requirements. It is still possible to create and submit a NGER report using OSCAR with warnings in place. There are currently known issues with OSCAR where validation warnings are not due to non-compliance and cannot be resolved due to OSCAR functionality issues. These include: 1. reporting emissions and energy from a waste source • In some circumstances where all appropriate data has been added a validation warning still occurs, often this will be due to OSCAR functionality and cannot be resolved. When this occurs reporters should disregard the warning; 2. geo-coordinates and addresses for facilities reported as a facility aggregate • NGER Regulation 4.25(3)(c) requires that facilities reported as an aggregate need to be identified by an address **or** latitude and longitude. OSCAR is creating validation warnings when one of these parameters is not met. This is not a compliance issue although the validation warning can be removed by filling address and geo-coordinate fields. 3. ANZSIC Codes for facilities • In certain circumstances, OSCAR is creating validation warnings about missing ANZSIC code despite the ANZSIC code being present. If this is the case, disregard message.
5	Electricity usage listed as combusted in the energy consumption table of Part B of the NGER report	Ignore. It should be listed as non-combusted.
6	Part A totals in the NGER report do not include the emissions and energy associated with data reported by percentage (regulation 4.26)	1. Print out Part A of the report 2. Print out first 2 pages of Part B of the report 3. Ask CEO to sign both Part A and the second page of Part B, where the controlling corporation totals table is situated 4. Send both of the above signed copies by post to Greenhouse and Energy Reporting Office to arrive by COB 31 October 2009
Please direct enquiries to 1800 018 831 or reporting@climatechange.gov.au www.oscar.gov.au		