

QUALITY ASSURANCE CHECKLIST								
Includes all reviews up to and including the 2003 Inventory Report:								
QA Activity & Procedures								
QA Activity	Description of QA procedure	Date of review	Reviewer	Expert qualifications assessed	Brief description of review scope (include a reference to the review contract)	Major conclusions from the review (include a reference to the review)	Action taken	Place where it is filed
Review of complete inventory	Not possible to do as an external review due to lack of time. Chapter 7 (LUCF) put out to review within ME.							
Expert review of Energy Sector	Review by T.S Clarkson of NIWA on the Energy Sector GHG emissions on the NIR/CRF submitted in 2001 (1999 inventory)	Aug 2001	T.S Clarkson of NIWA	NIWA report internally reviewed by K.R.Lassey	Peer review of energy sector as a quality control check, identify errors, make comments on GP and provide recommendations. NIWA Report WLG2001/50	1. The inventory is generally well presented and complete. 2. A QA/QC plan should be developed and adhered to when preparing the inventory to remove inconsistencies in CRF tables 3. Need a review of all emission factors to ensure they are up to date. 4. The documentation is insufficiently reported - statistics need explanation, and include supplementary documentation.	2. QA/QC plan being developed and will start to be implemented in 2004 inventory report. 3. Review of emission factors occurred in 2003. 4. Addressed in 2004 inventory report.	Shortcut to Energy Sector Review by Tom Clarkson link
	Review by T.S Clarkson of NIWA on the Energy Sector GHG emission reporting prior to submitting the 2002 NIR (2000 inventory)	April 2002	T.S Clarkson of NIWA	NIWA report internally reviewed by K.R.Lassey	Peer review of energy sector as a quality control check, identify errors, make comments on GP, provide recommendations, and comment on uptake of recommendations provided in 2001. NIWA Report WLG2002/30	1. The inventory is generally well presented and complete. 2. The CRF appears more robust than 2001 with fewer errors and inconsistencies 3. There is still a need to ensure a QA/QC plan is developed and adhered to when preparing the inventory. 4. Provide more evidence of QA/QC in NIR. 5. Bring documentation up to that mentioned in GP, QA/QC. 6. Optimise T1 methods and bring in GP (including uncertainty estimates). 7. Note in NIR where GP applied. 8. Develop longer plan for adopting a T2 or bottom up approach 9. Need a review of all emission factors to ensure they are up to date. 10. More work on differences between reference and sectoral approaches.	3. QA/QC plan-see comment above. 4. This is to be addressed in 2004 NIR. 5. Is being addressed. 6. Addressed. 7. This is addressed in 2003 and 2004 inventory reports. 8. T2 approach is being developed as time and resources allow. 9. This has now been addressed (see report details below). 10.	Hard copy kept in Len's tambour
	Review of Energy Sector Greenhouse Gas Emissions Factors. A report to the Energy Modelling and Statistics Unit of the Ministry of Economic Development. (as a response to the previous reviews by T.S. Clarkson)	March 2003	Hale & Twomey Limited Level 4, Gleneagles building 69-71 The Terrace POBox 10444 Wellington New Zealand.	Not documented (prior to QA procedures developed)	To undertake a review of the energy sector emissions factors used in NZ's GHG inventory and to recommend what emission factors should be used for each GHG and what further work the Ministry should arrange.	1. Changes recommended for the vast majority of emissions factors, including reverting to IPCC recommended factor. 2. Methodology could also be improved eg by splitting petrol to premium and regular. 3. Further work includes - review of coal CO2 emissions factors, review of coal CH4 fugitive emissions, routine updating of gas emissions moving to tier 3 calculation for Transport (MOT's Vehicle Fleet emissions model). 4. NZ standardise on kt/PJ as standard unit 5. Show emission factors to sufficient significant digits to indicate where grossing down has occurred.	1. Addressed-new recommended factors being used in 2004 inventory report. 2. Addressed-this has been implemented in 2004 inventory report. 3. This will depend on the time and resources of MED... 4. Consensus has not been reached on this issue. 5. This is addressed in the 2004 inventory report.	Hard copy kept in Len's tambour and draft report kept on the MIE network.
Expert review of Industrial Processes Sector	Review of Industrial Processes Sector of National Greenhouse Gases Inventory submitted on 15 April 2003	June 2003	Dr Doug Sheppard Geochemical Solutions PO Box 33 224 Petone New Zealand	Not documented (prior to QA procedures developed)	To review the industrial processes sector with an aim to identify gaps in reporting. Coverage does not include emissions of PFC's, HFC's and SF6	1. Clarify differences between tables, worksheets, the CRF and consultant reports. 2. Review why CO2 from methanol production is not reported. 3. Check confusion over quantities of bitumen, ethanol and ammonia. 4. Check production quantities of wooden panel products. 5. Provide more explanation and documentation of underlying assumptions. 6. Review and restructure content of questionnaire used to gather information from industry.	1. Energy sector? 2. This information is in the energy sector 3. Has been cleared up through CRL report (2004). 4. Very small part of inventory-not considered high priority at this stage. 5. This is being addressed in the 2004 inventory report. 6. A new consultant has been found for this section of work who is more quality conscious.	Shortcut to Industrial Processes review Doug Sheppard 30 06 03.doc link
	Review of synthetic greenhouse gases in industrial processes sector	August 2004	Iain McClinchy contractor to Ministry for the Environment			1. NZCCO to establish formal relationship with Customs to ensure provision of data on a more regular basis. 2. NZCCO consider development of regulations under the Climate Change Reponse Act to clarify its powers to request data from importers and end users. 3. NZCCO work with Customs and the MED to develop a more useful set of tariff codes. 4. That potential emissions data be calculated and presented for future inventories in accordance with IPCC guidelines.		_03 - Sector Reports\02 - Industrial Processes\Revised Comments on inventory of HFC, PFC and sf6 emissions 16/04.doc
Expert review of Solvent Sector								

Expert review of Agriculture Sector	Peer review of nitrous oxide work through scientific papers: de Klein C A M, Barton L, Sherlock R R, Li Z, Littlejohn R P (2003). Estimating a Nitrous Oxide Emission Factor for Animal Urine from Some New Zealand Pastoral Soils. Australian Journal of Soil Research. 41(3): 381-399	2003		Not documented (prior to QA procedures developed)					
	Report to MAF: Revised nitrous oxide emissions from New Zealand agricultural soils 1990-2001	2003	F.M. Kelliher, S.F. Ledgard, H. Clark, A.S. Walcroft, M. Buchan & R.R. Sherlock	Not documented (prior to QA procedures developed)	Revision of nitrous oxide emissions from agricultural soils 1990-2001-including recommendations for inventory improvement	1. N2O emissions from grazing animal's urine & dung excreta should be estimated using separate emission factors (these to be determined from available & future measurements of NzOne). 2. Grazing animal feed intake should be determined by the model by Clark et.al. to connect N2O and CH4 emissions inventories. 3. Nitrogen excretion by grazing animals should be determined using model OVERSEER 4. Sales records should be used to determine N fertiliser use.	1. Not able to be done at present- explanation in NIR. Research ongoing 2. Has been addressed-model used. 3. Has been addressed-model used 4. Has been addressed-sales records now used.	\\03 - Sector Reports\04 - Agriculture\N2O A Revised Nitrous Oxide Emissions Inventory for New Zealand 1990 - 2001 Kelliher.doc	
	Review of "Enteric methane emissions from New Zealand ruminants 1990-2001 calculated using an IPCC Tier 2 approach by Harry Clark, Ian Brookes and Adrian Walcroft"		K. R. Lassey of NIWA	Not documented (prior to QA procedures developed)					Report kept in Ag sector filemaster box in Len's tambour
	Review of Agricultural sector GHG program to ascertain whether program is meeting objectives	2004	Marc Uilyatt		The research projects contracted by MAF over the period 2001-2004 to improve the methane inventory are reviewed within a framework that allows consideration of first the progress in developing an overall inventory model and second research into the components of the model.	The reviewer recommended the following areas need to be addressed, in the following order: 1. Evaluation of the soil sink for methane under plantation forests. 2. Continuation of the work determining enteric methane emission factors. 3. Determination of the proportion of methane emitted via the flatus. 4. Continued evaluation of satellite imagery in determining nutritive value on a national scale. 5. An independent evaluation of the methodology used in uncertainty analysis. 6. Measurements to determine an emission factor for waste management via anaerobic lagoons. 7. Annual upgrading of the model (this should probably be listed as an overhead outside research priorities because of the UNFCCC requirement for annual inventory reporting).			Shortcut to CH4 UilyattMetReport2fin - review.doc Ink
	Review of NZ Official 1990 Animal Statistics	2004	Meat and Wool New Economic Service Rob Davison	Organised by MAF	Review sheep livestock numbers and provide an assessment for base livestock from 1989-1991.	1. Sheep numbers from the 1991 census are probably too low and should be revised in the inventory. They would likely increase by 2% from 55,162 to 56,300. Lambs tailed would increase 7% from 38,716 to 41,398.	Follow up with MAF to ensure consistency	\\03 - Sector Reports\04 - Agriculture\CB502 reestimation of sheep in 1991 report.doc	
Expert review of Land use change and forestry Sector									
Expert review of Waste Sector									
Review of QA/QC procedures and plan	Review of current QA/QC procedures and plans in the national inventory	2004	Mr Wayne Gillies Claws consulting Ltd	CV assessed and in records	Report detailing how the current Quality Assurance and Quality Control (QA/QC) procedures and plan used in the Inventory compare to the QA/QC guidance in GPG. Provide a prioritised list of recommendations to be implemented for the New Zealand inventory QA/QC system to be consistent with GPG.	Key short term recommendation is to document a plan to achieve consistency with GPG by 30/9/06 and ensure this plan is understood & agreed with all necessary parties.	Plans to address this during 2005 calendar year	REV CCO Report from WGillies final.doc	