Australian Government
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National Pollutant Inventory

Emission Estimation Technique manual for

Intensive Livestock – Poultry Raising

Version 3

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Disclaimer
The manual was prepared in conjunction with Australian states and territories according to the *National Environment Protection (National Pollutant Inventory) Measure.*

While reasonable efforts have been made to ensure the contents of this manual are factually correct, the Australian Government does not accept responsibility for the accuracy or completeness of the contents and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this manual.

Table of Contents

List of Tables, Equations and Examples

TABLES

EQUATIONS

EXAMPLES

1 Introduction

National Pollutant Inventory (NPI) Emission Estimation Technique (EET) manuals provide guidance to assist facility reporters to report emissions and transfers of NPI substances to the NPI. This manual describes the procedures and recommended approaches to estimating emissions and transfers from poultry raising.

NPI substances are those that, when emitted at certain levels, have the potential to be harmful to human health or the environment. Australian state and territory governments have legislated that industry will report these emissions on an annual basis. Reportable NPI substances are listed in the NPI Guide and are classified into six categories, with different reporting thresholds. If your facility trips a threshold in a reporting year for an NPI substance, all emissions of that substance to air, water and land from your facility must be reported. Transfers of NPI substances must also be reported for each substance tripped in Categories 1, 1b and 3. Reporting of transfers depends on whether the NPI substance is transferred to a mandatory or voluntary reporting transfer destination. For more information on the NPI program, please consult the NPI Guide, which is available from the NPI website at www.npi.gov.au.

The ANZSIC code and ANZSIC code descriptions that apply to this Manual are as follows:

EET MANUAL 2006 ANZSIC code and description	Intensive Livestock – Poultry Raising
	0171 - Poultry Farming (Meat)
	0172 - Poultry Farming (Eggs)

The ANZSIC code is part of NPI reporting requirements. The NPI Guide contains an explanation of the ANZSIC classification system. Under Clause 14 of the *NPI National Environment Protection Measure* (NPI NEPM), a facility is only required to report under the NPI if the ANZSIC code for one or more activities undertaken at the facility is included by the Commonwealth on a published list as an industry type required to report. The NPI publishes a list of participating ANZSIC codes under the NPI NEPM (NPI, 2006). It is recommended that the list of relevant ANZSIC codes under the NPI NEPM (NPI, 2006) are checked prior to reporting each year as the NPI NEPM is subject to review and change.

This manual has been developed through a process of national consultation involving state and territory environmental authorities and key industry stakeholders. Particular thanks are due to the Victorian Farmers Federation, Australian Egg Corporation Limited, Australian Chicken Meat Federation, Australian Chicken Growers Council, and the Feedlot Services Australia (FSA Consulting) for their assistance in developing this manual.

2 Process description

Poultry raising operations consist of several activities such as feedstock storage, feeding systems, animal housing, disposal of biological matter, vehicle operation, waste removal, storage and treatment.

Some facilities may generate their own power by fuel combustion or use biogas to produce power on-site. Biogas is considered a fuel for NPI purposes, and must be considered against thresholds in the NPI Guide.

2.1 Layer production systems

The layer industry can be categorised by a number of different production sectors, including breeder farms, pullet rearing, hatcheries and layers.

Due to the different requirements of egg farms and breeder farms, egg producers often purchase day old chicks or pullets, rather than operating their own breeding farm.

2.1.1 Breeding farms

Breeding farms house the breeding hens and roosters that produce fertile eggs. The birds that produce the egg chickens are known as the parent or secondary stock. They are housed in sheds with either litter or mesh flooring, or a combination of both. The fertile eggs produced by the parent stock are collected daily and stored for transport to a hatchery. The parent stock is productive for about 12 months. At the end of their productive life they are removed for meat processing. The spent litter is cleaned from the sheds at the end of each 12 month cycle and the process repeated.

2.1.2 Hatcheries

Hatcheries are where eggs collected from the parent stock are incubated, until the eggs hatch. The chicks produced are consigned to either egg production or pullet rearing farms within hours of hatching. Sheds are washed and disinfected at the end of each batch.

2.1.3 Pullet rearing

Pullet rearing facilities raise day old chicks to point of lay pullets (approximately 17 weeks of age). These pullets are then transferred to egg production facilities or else sold off-site to other egg enterprises. Pullets are generally reared in cages but may also be reared under litter-based systems.

2.1.4 Layer operations - cage

Caged layer systems produce around 80% of the eggs sold in Australia, as this is currently the most cost effective system. The two forms of cages used in egg production are conventional cages and environmental cages.

With conventional cage systems, the manure drops down under cages and is removed every six to twelve months.

Sheds fitted with environmental cages have computerised climate control with tunnel ventilation. Most of these sheds also have automated feeding systems and many are also fitted with conveyor belts under the cages that collect and remove the manure. These belts are often fitted with a drying system that removes moisture from the manure to optimise the shed environment and hence improve production. Once removed from the shed, the manure is usually transported from the farm immediately for further processing or use in agriculture.

2.1.5 Layer operations - barn laid

The barn laid system currently represents about 5% of egg production in Australia. These systems comprise an automated nesting system with the hen group housed in sheds with litter and perches.

2.1.6 Layer operations - free range

Free range systems currently represent about 15% of egg production in Australia.

Free range systems comprise weatherproof sheds with an adjoining outdoor range (sometimes covered with mesh to minimise contact with wild birds). Increasingly, free range systems have automated nesting, feeding and watering systems.

2.2 Meat bird production

Poultry meat production in Australia is dominated by the meat chicken industry, together with duck and turkey meat production. The meat chicken industry in Australia is predominantly vertically integrated with three large companies supplying 80% of the market.

2.2.1 Meat chicken breeding farms and hatcheries

As with the egg industry, meat chicken breeder farms keep breeding hens and roosters to produce fertile eggs. The breeding stocks are productive for about twelve months, at which point they are removed for meat processing. The manure, or spent litter, is cleaned from the sheds at the end of each cycle and the process repeated.

The breeder farms generally use sheds that have a combination of roosting areas, with litter based systems in the remainder of the shed. Pullets and cocks are grown out on rearing farms where a litter-based system is commonly used to raise the birds to productive age (approximately 18 weeks).

The hatcheries produce day-old chicks that are distributed to the grower farms.

2.2.2 Meat chicken farms

The meat chicken industry in Australia is mainly comprised of growers who generally grow out day old chicks for processing under contract to companies. The contract growers own the farm and provide the management, shedding, equipment, labour, bedding and other inputs to rear the poultry. The processing company provides and owns the chickens and provides feed, medication and technical advice.

The industry generally uses litter-based systems for raising meat chickens. There are a small percentage of free range operations that use a combination of sheds with litter and outdoor runs. Birds are typically housed in tunnel ventilated sheds with controlled climate conditions.

2.2.3 Turkey production systems

Approximately 4.7 million turkeys are produced each year in Australia. Turkey breeders and grower birds are predominantly raised on litter-based systems with the litter removed at the end of the breeding cycle or production of a batch of birds. Breeder farms (eggs and rearing) will generally be conducted as part of a separate operation, with the birds housed on litter.

2.2.4 Duck production systems

Approximately 5.3 million ducks are produced each year in Australia. Most flocks involve breeding and growing out in separate operations, with an average grow-out period of seven weeks. Litter-based systems are the most common, with the litter removed at the end of the breeding cycle or batch of birds. Sheds usually contain a concrete apron at the drinkers where excess liquid is directed out of the shed to prevent excess wetting of the litter.

3 Thresholds

The following information is needed for the reporting period:

- knowledge of the stock capacity for the specific type of production system.
- the manure/litter management system employed at the poultry operation.

Usage is defined as the handling, manufacture, import, processing, coincidental production or other uses of the substances. The threshold for ammonia, generated from the manure, may be tripped from poultry raising activities.

> *The 'stock capacity' is the number of birds that the farm (facility) carries at a time. It can be considered as the number of birds in a 'batch' and is NOT the annual throughput of birds.*

The number of poultry of each type required to trigger the NPI threshold for ammonia is shown in Tables 1 to 4. If the threshold is reached, then the facility must report emissions of ammonia from the operations conducted on-site.

Table 1: Layer production systems reporting threshold for ammonia emissions based on stock capacity

Bird type/ production system	Stock capacity required to trigger reporting
Layer – high rise	36,400
Layer – belt	294,100
Layer – barn	50,800
Layer – free range	40,500
Layer breeder – barn	33,400
Layer breeder – belt	200,000
Layer rearer – barn	191,900
Layer rearer – belt	318,500
*Source: FSA Consulting 2007 p.37	

Table 2: Meat chicken production systems reporting thresholds for ammonia emissions

Bird type/ production system	Stock capacity required to trigger reporting
Meat chicken shed / free range	87,600
Meat chicken breeder	32,300
Meat chicken rearer	118,900
***Source: FSA Consulting 2007 p.37	

Table 3: Turkey production systems reporting thresholds for ammonia emissions

Bird type/ production system	Stock capacity required to trigger reporting
Toms	19,800
Hens	49,300
Turkey breeder	18,200
Turkey rearer	42,000
***Source: FSA Consulting 2007 p.38	

Table 4: Duck production systems reporting thresholds for ammonia emissions

Bird type/ production system	Stock capacity required to trigger reporting
Meat duck	47,600
Duck breeder	20,300
Duck rearer	77,800
***Source: FSA Consulting 2007 p.38	

In addition to the above, facility operators are advised to check the *NPI Guide* for further information on thresholds.

Example 1: Assessing thresholds - Using stock capacity

Facility A is a layer rearer operation where manure is removed via a belt. The same process is undertaken at three sheds at the site.

The stock capacity for all three sheds on site is 300,000 birds.

From Table 1, it can be seen that the reporting threshold for this layer rearer operation is 318,500 birds.

As the number of birds in this example falls below this number, Facility A **does not have a requirement to report** emissions of ammonia to the NPI (however the facility should consult the *NPI Guide* to ensure they do not have a reporting requirement under a different threshold, such as combustion of fuel).

Example 2: Assessing thresholds - Using stock capacity

Facility B is a meat chicken operation with a total stock capacity of 100,000 birds.

From Table 2, it can be seen that the reporting threshold for meat chicken operations is a stock capacity of 87,600 birds. As of the number of birds is above this threshold, Facility B **has a requirement to report** emissions of ammonia to the NPI.

Facilities with reporting requirements should consult Section 4 of this manual. If using emission factors to estimate emissions consult Section 4.1.1 and Example 4.

Example 3: Assessing thresholds - Using stock capacity and fuel combustion thresholds

Facility C is a duck rearer operation with a total stock capacity of 80,000 birds.

From Table 4, it can be seen that the reporting threshold for duck rearer operations is 77,800 birds. As the number of birds is above this threshold, Facility C **has a requirement to report** emissions of ammonia to the NPI.

In addition to the above, the facility burns more than 400 tonnes of fuel in a year for the purposes of heating, cooling, and for on-site vehicles. As the facility has exceeded the Category 2a threshold, reporting is required for Category 2a substances.

In this situation, the facility should consult the following resources for further assistance in estimating emissions of Category 2a substances:

- *NPI Guide*
- *Combustion in boilers manual*
- *Combustion engines manual*

These resources can be found on the NPI website.

4 Emissions of NPI substances

General information regarding emissions of NPI substances can be located in the NPI Guide. Emissions from poultry raising will generally be fugitive emissions, due to losses from sheds.

4.1 Emissions to air

Fugitive emissions at a poultry raising facility may occur from:

- dust from stockpiles and volatilisation of ammonia from stockpiled manure
- ridgeline roof-vents, louvres, and open doors of a building

Point source emissions may include:

- emissions from fuel combusted in a boiler, space heater and/or an engine on-site

4.1.1 Emissions of Ammonia

In this manual emission factors have been produced to estimate the amount of ammonia emitted from poultry urine and manure associated with poultry farming. Emission factors for poultry raising are expressed as kilograms of ammonia per stock capacity.

Table 5: Layer production systems - ammonia emission factors

Bird type/production system	kg ammonia/stock capacity
Layer – high rise	0.275
Layer – belt	0.034
Layer – barn	0.197
Layer – free range	0.247
Layer breeder – barn	0.299
Layer breeder – belt	0.050
Layer rearer – barn	0.052
Layer rearer – belt	0.031
***Source: FSA Consulting 2007 p.38	

Table 6: Meat chicken production systems - ammonia emission factors

Bird type/production system	kg ammonia/stock capacity
Meat chicken – shed/free range	0.114
Meat chicken breeder	0.310
Meat chicken rearer	0.084
***Source: FSA Consulting 2007 p.39	

Table 7: Turkey production systems - ammonia emission factors

Bird type/production system	kg ammonia/stock capacity
Toms	0.505
Hens	0.203
Turkey breeder	0.548
Turkey rearer	0.238
***Source: FSA Consulting 2007 p.39	

Table 8: Duck production systems - ammonia emission factors

Bird type/production system	kg ammonia/stock capacity
Meat ducks	0.210
Duck breeder	0.439
Duck rearer	0.129
***Source: FSA Consulting 2007 p.39	

The equation for estimating emissions of ammonia from poultry operations is as follows:

Equation 1: Ammonia emissions

$E_{NH3}/yr = EF_{NH3} \times A$

Where:

E_{NH3} = Emission of ammonia per year
EF_{NH3} = Emission factor for ammonia specific for facility type and operation
A = Activity, being the stock capacity of the facility.

Example 4: Estimating emissions of ammonia from a poultry facility using stock capacity

Facility D is a meat duck operation. The facility has determined from Table 4 that they do have a reporting requirement for ammonia, as the stock capacity for this facility is 50,000 birds.

The emission factor for this facility and operation type (0.210 kg/stock capacity/yr) is listed in Table 8.

Using Equation 1: $E_{NH3/yr} = EF_{NH3} \times A$

$E_{NH3/yr} = 0.210 \times 50{,}000$

$E_{NH3/yr} = 10{,}500$ kg/yr

An emission of 10,500 kg of ammonia must be reported to the NPI. In poultry operations, emissions of ammonia are generally reported to the destination 'Air Fugitive'.

4.2 Emissions to water

Emissions of substances to water from poultry raising are only likely to occur as a result of accidental spillage. In the normal operation of a poultry raising operation, spent litter and feed should NOT enter waterways.

If this does happen you are legally required to immediately contact your state or territory environment agency for guidance. Any such emissions are also reportable to the NPI if thresholds are exceeded.

4.3 Emissions to land

In general, the substances generated by activities related to poultry when applied to land are considered a voluntary transfer and not an emission to land. This applies to substances such as Total Nitrogen, Total Phosphorus and other substances which when applied in acceptable concentrations are considered beneficial to the land to which it is applied.

These substances can be reported as a transfer to a voluntary reporting transfer destination. Please refer to Section 5 for information on the reporting of transfers.

For all other substances, discharges to land should be reported as an emission to land.

5 Transfers of NPI substances

General information regarding transfers of NPI substances can be located in the NPI Guide and the Transfers Information Booklet.

With respect to poultry raising operations, Table 9 & 10 illustrate possible waste destinations and whether it is mandatory (final destination) or voluntary (reuse) to report the transfer of an NPI substance.

For Total Nitrogen and Total Phosphorus, if the amount exceeds the applicable threshold, and the destination is a mandatory reporting destination, then reporting of the transfer is required.

While ammonia is the substance most commonly emitted from a poultry facility, it does not need to be considered for transfers, as it is produced in the waste by the volatilisation of nitrogen (i.e. ammonia is relevant to air emissions). Total Nitrogen is a substance which will likely need to be reported as a transfer from facilities with a mandatory reporting destination for waste. It is important to note that if the threshold for Total Nitrogen is exceeded, then transfers of both it and Total Phosphorus are reportable.

Table 11 illustrates different operation types and the number of birds required to trigger reporting of transfers in waste to a mandatory reporting destination and transfer emission factors. Equation 2 shows how transfers are calculated.

Table 9: Reporting transfers requirements

Waste stream containing NPI substances	Reporting requirements
Solid waste stockpiled on farm indefinitely (On-site Long term waste storage)	**Reporting is mandatory** Discharge to final destination, reporting is mandatory
Solid waste sent to an off-site landfill (Off-site Landfill)	**Reporting is mandatory** Discharge to final destination, reporting is mandatory
Solid waste spread on farm for fertiliser (On-site Reuse) It is recognised that the reuse of nutrients contained in the solid waste is generally a "beneficial reuse". However, individual substances in the solid waste will only be considered as "reuse" when evidence exists to demonstrate that the substance, in the concentration range that is present in the solid waste, provides a demonstrable benefit to the receiving land. When solid waste is applied which contains substances in concentrations in excess of those which benefit the land, it is an emission to land for these substances and must be reported as such.	**Reporting is voluntary for substances which have demonstrated benefit (e.g. Total Nitrogen, Total Phosphorus and other substances when applied in acceptable concentrations) to the land to which it is applied** These substances can be reported as a transfer to a *voluntary reporting transfer destination*. **Reporting as an emission to land is mandatory for all other substances** For each NPI substance*, which exceeds the Category 1, 1b, 2a, or 2b thresholds for the facility as a whole, the amount of this substance in the solid waste must be reported as an emission to land. *(*excluding those substances for which emission to land is not a valid destination e.g. PM10).*
Solid waste transferred from farm for reuse as fertiliser elsewhere (Off-site Reuse)	**Reporting is voluntary** NPI substances in the waste can be reported as a transfer to a *voluntary reporting transfer destination*.

Table 10: Possible Transfer Destinations

Off-site Landfill*
Off-site Long term waste storage*
Off-site Reuse^
On-site Long term waste storage*
On-site Reuse^

^voluntary reporting; *mandatory reporting

If your facility has exceeded the threshold and is required to report transfers, only the amount of the actual substance(s) transferred is reportable (i.e. you should report only the amount of NPI substances in the waste, not the total waste or total amount of manure).

Example 5: Reporting transfers of NPI substances in waste

Facility E, a meat chicken rearer, has a manure management process whereby manure is removed from the shed, and sent to landfill. From Table 9, it is mandatory to report transfers of waste to landfill in the event the reporting threshold is tripped.

Facility E has a stock capacity of 40,000 birds. According to Table 11, the threshold for transfers reporting for this type of operation is a stock capacity of 17,647 birds. Therefore, Facility E must report transfers of Total Nitrogen and Total Phosphorus, calculated using the following equation:

Total Nitrogen = 40,000 × 0.50
Total Nitrogen = 20,000 kg/yr

Total Phosphorus = 40,000 × 0.17
Total Phosphorus = 6,800 kg/yr

The facility reports a transfer of 20,000 kg/yr of Total Nitrogen and 6,800 kg/yr of Total Phosphorus off-site to landfill. In addition to reporting the transfer, the facility also calculates and reports emissions of ammonia.

Table 11: Total Nitrogen and Total Phosphorus thresholds for transfers reporting and transfer factors

Poultry class	Stock capacity to trigger transfers reporting for Total Nitrogen and Total Phosphorus	Total Phosphorus excretion transfer factors (kg/stock capacity)	Total Nitrogen excretion transfer factors (kg/stock capacity)
Layer – high rise	25,000	0.12	0.34
Layer – belt	16,667	0.18	0.54
Layer – barn	21,429	0.14	0.41
Layer – free range	23,077	0.13	0.37
Layer breeder – barn	15,000	0.20	0.57
Layer breeder – belt	11,111	0.27	0.78
Layer rearer – barn	27,273	0.11	0.33
Layer rearer – belt	25,000	0.12	0.34
Meat chicken – shed/free range	42,857	0.07	0.22
Meat chicken breeder	12,000	0.25	0.75
Meat chicken rearer	17,647	0.17	0.50
Turkey – toms	9,091	0.33	0.95
Turkey – hens	13,636	0.22	0.63
Turkey breeder	5,556	0.54	1.57
Turkey rearer	11,111	0.27	0.78
Meat duck	33,333	0.09	0.26
Duck breeder	6,818	0.44	1.28
Duck rearer	15,789	0.19	0.56
*****Source: FSA Consulting 2007 p.16 & Robinson & Sharpley 1995			

- *Note: The Trigger value in the table is based on the minimum value for Total Phosphorus (3 tonnes per year)*

Equation 2: Transfer calculation

$T_{P/N}/yr = TF_{P/N} \times A$

Where:

$T_{P/N}$ = Transfer of Total Phosphorus/ Total Nitrogen per year
$TF_{P/N}$ = Transfer factor for Total Phosphorus or Total Nitrogen specific for facility type and operation
A = Activity, being the stock capacity of the facility.

6 Next steps for reporting

This manual has been written to reflect the common processes employed by poultry raising facilities. To ensure a complete report of the emissions and transfers from the facility, it may be necessary to refer to other EET manuals such as, but not limited to:

- Combustion in boilers,
- Fuel and organic liquid storage
- Combustion in engines,
- Fugitive emissions, and
- Meat processing.

When estimates of substance emissions and transfers from the facility are complete, report the emissions and transfers according to the instructions in the NPI Guide. A simplified form is available in Appendix C for reporting Ammonia emissions. If more than 400 tonnes of fuel is burned on site you must use the online reporting system or standard paper form.

7 References

ANZSIC: *Australian and New Zealand Standard Industrial Classification, Australian Bureau of Statistics and Statistics New Zealand 2006*, ABS Catalogue 1292.0

Chastain, JP, Camberato, JJ & Skewes, P 2000, 'Poultry manure production and nutrient content', *Certified Animal Manure Managers Certification Program – Poultry*. Clemson University, Clemson.

FSA Consulting 2007, *Review of Emission Factors for the Estimation of Ammonia Emissions from Poultry*, and references contained therein.

J.S.Robinson, A.N.Sharpley, Release of Nitrogen and Phosphorus from Poultry Litter, Journal of Environment Quality, 1995

Perry, R & Green, D 1997, *Perry's Chemical Engineers' Handbook*, 7th Ed., McGraw-Hill, New York.

The following emission estimation technique manuals are available from the NPI website, www.npi.gov.au and from your local Government Agency:

- *Combustion in Boilers Emission Estimation Technique* manual;
- *Fugitive Emissions Emission Estimation Technique* manual;
- *Fuel and Organic Liquid Storage Emission Estimation Technique* manual;
- *Combustion Engines Emission Estimation Technique* manual;
- *Meat Processing Emission Estimation Technique* manual

Appendix A: Definitions and abbreviations

ANZSIC	Australian and New Zealand Standard Industrial Classification
Biogas	a gas (produced from decomposition of waste) comprising methane and carbon dioxide that can be used as a fuel
EET	Emission Estimation Technique
EF	Emission factor
Emission	For the purpose of NPI reporting means the release of a substance to the environment, whether in pure form or contained in other matter, and whether in solid, liquid or gaseous form.
Facility	Any building, land or offshore site from which an NPI substance may be emitted, together with any machinery, plant, appliance, equipment, implement, tool or other item used in connection with any activity carried out.
Kg	Kilogram
Mandatory reporting transfer destination	For the purposes of NPI reporting, mandatory reporting transfer destination means destination for containment, including landfill, tailings storage facility, underground injection or other long term purpose-built waste storage structure; an off-site destination for destruction; an off-site sewage system; or an off-site treatment facility which leads solely to one or more of the above.
NPI	National Pollutant Inventory
ORS	Online reporting system
PM	Particulate Matter
PM_{10}	Particulates which have an aerodynamic diameter equal to or less than 10 micrometers ($\leq 10\mu m$)
t	Tonne
TET	Transfer emission technique

Transfer	The transport or movement, on-site or off-site, of substances contained in waste for:
	• containment;
	• destruction;
	• treatment that leads to:
	  o reuse, recycling or reprocessing;
	  o purification or partial purifications;
	  o remediation; or
	  o immobilisation;
	• energy recovery.

Usage	The handling, manufacture, import, processing, coincidental production or other use of the substance.

Volatilisation	The process by which a substance evaporates to a gas at room temperature
Voluntary reporting transfer destination	Means a destination for reuse, recycling, reprocessing, purification, partial purification, immobilisation, remediation or energy recovery.

Appendix B: Modifications to the intensive livestock – poultry raising emission estimation technique (EET) manual (Version 2.1, June 2013)

Page	Outline of alteration
Throughout	The manual has been transcribed into a new template resulting in the restructuring of content and removal of information covered in the NPI Guide.
Throughout	Clarification of definitions and use of 'stock capacity' (to replace 'average number of birds per year') to calculate emissions and transfers
Throughout	Removal of 'liveweight' calculations for meat producers, replaced with 'stock capacity' factors
Throughout	Removal of reference to 'Shed+storage' and 'Shed+storage+spreading' as the emissions from these processes are not currently required to be reported
i	Removal of phone number from contact details as no longer connected
5	Amendment of Table 1 to include reporting threshold for 'Layer breeder – belt' as this was not included in the last manual update
5	Amendment of Examples 2 & 3 to include reporting threshold based on 'stock capacity'
6	Amendment of Table 5 to include emission factor for 'Layer breeder – belt' as this was not included in the last manual update
7	Amendment to Example 4 to include reporting thresholds and emission factors based on 'stock capacity'
8	Inclusion of reportable transfer destinations in Table 9, and insertion of Table 10 showing voluntary and mandatory destinations
9	Amendment of transfer factors in Example 5 and Table 11. Stock capacity to trigger transfer figures also amended due to overestimation in original transfer factors
10	Inclusion of transfer calculation equation
15	Inclusion of 'Layer breeder – belt' emission factor in Step 1 emission calculation table. Updated emission factors for meat birds for 'stock capacity' replacing per 'liveweight' factors
16	Step 2, transfer emission calculation table amended to include corrected transfer factors, as well as inclusion of all bird type/production systems
17	Added 'if applicable' to ACN in simplified reporting form
17	Removal of phone number from contact details as no longer connected

Appendix C: Simplified reporting form

This form is intended for poultry raising operations that are only required to report ammonia emissions. Larger facilities and/or those with a requirement to report emissions of NPI substances from fuel burning should use the standard NPI Reporting Form, or the NPI Online Reporting System (information is available from http://www.npi.gov.au/reporting/index.html).

Step 1 – Does your facility exceed the reporting threshold?

Enter the stock capacity for the relevant bird type/production system in Column 1. Multiply Column 1 by the emission factor in Column 2. Enter your result in Column 3.

Column number	**1**	**2**	**3**
Bird type/production system	**Stock capacity**	**Emission Factor**	**Emissions of ammonia kg/yr**
Layer – high rise		0.275	
Layer – belt		0.034	
Layer – barn		0.197	
Layer – free range		0.247	
Layer breeder – barn		0.299	
Layer breeder – belt		0.050	
Layer rearer – barn		0.052	
Layer rearer – belt		0.031	
Meat chicken – shed/free range		0.114	
Meat chicken breeder		0.310	
Meat chicken rearer		0.084	
Turkeys – toms		0.505	
Turkeys – hens		0.203	
Turkey breeder		0.548	
Turkey rearer		0.238	
Meat ducks		0.210	
Duck breeder		0.439	
Duck rearer		0.129	
Total emission*			

* If total emission is greater than 10 tonnes, you have exceeded the ammonia threshold and will need to report to the NPI.

Step 2 - Does your facility need to report transfers of Total Nitrogen and Total Phosphorus?

Please refer to Table 11, if you need to report transfers, enter the stock capacity for the relevant bird type/production system in Column 1. Multiply Column 1 by the transfer factor (in Columns 2, 3). Enter your results in Column 4, 5 and 6.

Column Number	1	2	3	4	5	6
Bird type/production system	**Stock capacity**	**Total Phosphorus excretion transfer factors (kg/stock capacity/yr)**	**Total Nitrogen excretion transfer factors (kg/stock capacity/yr)**	**Total Phosphorus excretion kg/yr**	**Total Nitrogen excretion kg/yr**	**Destination (Refer to Table 10)**
Layer – high rise		0.12	0.34			
Layer – belt		0.18	0.54			
Layer – barn		0.14	0.41			
Layer – free range		0.13	0.37			
Layer breeder – barn		0.2	0.57			
Layer breeder – belt		0.27	0.78			
Layer rearer – barn		0.11	0.33			
Layer rearer – belt		0.12	0.34			
Meat chicken – shed/free range		0.07	0.22			
Meat chicken breeder		0.25	0.75			
Meat chicken rearer		0.17	0.5			
Turkeys – toms		0.33	0.95			
Turkeys – hens		0.22	0.63			
Turkey breeder		0.54	1.57			
Turkey rearer		0.27	0.78			
Meat ducks		0.09	0.26			
Duck breeder		0.44	1.28			
Duck rearer		0.19	0.56			

- *Note: The Trigger value in the table is based on the minimum value for Total Phosphorus (3 tonnes per year)*

Step 3 – Provide your facility details
Please complete the following.

Information marked with an * will appear on the NPI public website. All fields are mandatory.

Facility details	
Registered company name*[1]	
Registered company address	
Australian Company Number (ACN) (if applicable)*	
Australian Business Number (ABN)*	
Physical location of the facility (spatial coordinates)*	
Name of facility*[1]	
Facility address*	
Public contact details - who the public can contact	
Position*[2]	
Phone *[3]	
Technical contact - who the NPI can contact	
Name	
Phone	
Email	
If you are an owner-occupier: 1 – and your registered name or farm name is the name of the owner-occupier, you may use an alternative descriptive name (such as the name of the property). 2 – you may use a generic term such as “Manager” or “Environmental Manager”. 3 – you may use the phone number of your industry association if you have received their approval to do so.	
Pollution control/emission reduction activities – please note anything you do at the facility to reduce emissions	

Step 3 - Certification
I hereby certify that to the best of my knowledge the information on this form has been provided using all due care and diligence.

Name …… Position ……..

Signature …… Date ……..

Once complete, this form should be emailed, faxed or posted to the NPI team in your state or territory. Visit http://www.npi.gov.au/contacts/state-territory.html for contact details.