Australian Government
Department of Industry, Science, Energy and Resources

Tranche 2 additions to the *Safeguard Mechanism: Prescribed production variables and default emissions intensities* document

Abbreviations and acronyms

CO_2	Carbon dioxide
GJ	Gigajoules
NGER	National Greenhouse and Energy Reporting
t	tonnes
t CO_2-e	tonnes of CO_2 equivalent

PURPOSE OF THIS DOCUMENT

The purpose of this document is to **define production variables** for use in calculated baseline applications made under the Safeguard Mechanism.

They will be used for setting baselines using the following formula:

For all relevant production variables:

Facility baseline = Σ (Production x Emissions Intensity)

Each production variable definition identifies the emissions sources that can contribute to the calculation of an emissions intensity value.

There are two types of emissions intensity values:

- **Default emissions intensity values**: are set by the Government and published in the Safeguard Mechanism Rule. They represent the industry average emissions intensity of production over five years.
- **Estimated (site-specific) emissions intensity values**: are set by businesses. They represent the emissions intensity of production at an individual facility.

This document can help businesses to understand which emissions sources have been used in the development of the default emissions intensity values, and which emissions sources can be used in an estimated (site-specific) emissions intensity value calculation.

Following public consultation on this document and the exposure draft *National Greenhouse and Energy Reporting (Safeguard Mechanism) Amendment (Additional Prescribed Production Variables) Rule 2020,* the contents of this document will be included in the '*Safeguard Mechanism: Prescribed production variables and default emissions intensities'* document, which is available on the Department of Industry, Science, Energy and Resources website[1].

The *Safeguard Mechanism: Prescribed production variables and default emissions intensities* document is referred to in section 6 of the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* (Safeguard Rule).

Background

Sources of emissions used in setting default emissions intensity values

Production variable definitions and default emissions intensity values are published in Schedules 2 and 3 of the Safeguard Rule.

- **Schedule 2 production variables** result in baselines that can be updated each year for actual production.
- **Schedule 3 production variables** result in baselines that are fixed.

[1] Here: https://www.industry.gov.au/data-and-publications/safeguard-mechanism-prescribed-production-variables-and-default-emissions-intensity-values

Almost all production variables are in Schedule 2. Schedule 3 is intended to allow for circumstances where an appropriate output-based production variable could not be found, so a proxy has been used that is not appropriate for annual adjustment.

All facilities can access a transitional calculated baseline in 2018-19, 2019-20 or 2020-21. During this transitional phase, the use of default emissions intensity values is optional.

A facility with multiple outputs could use a combination of default and estimated (site-specific) emissions intensity values. In these cases, it is important that emissions are not counted twice. That is, emissions should only be assigned to one production variable. In some cases, emissions from a particular process will need to be apportioned among two or more production variables.

The *Safeguard Mechanism: Prescribed production variables and default emissions intensities* document defines the production variables and specifies the sources of emissions used by the Department to calculate default emissions intensity values. It provides guidance for businesses and auditors on the emissions sources facilities can use in site-specific emissions intensity calculations and how apportioning should be done.

Sources of emissions that can be used by Responsible Emitters when setting an estimated (site-specific) emissions intensity for a prescribed production variable

Subsection 6(8B) of the Safeguard Rule establishes that where a facility uses an estimated (site-specific) emissions intensity value, the facility can only include emissions relevant to the calculation of the default emissions intensity value (or emissions relevant in defining the prescribed production variable wherever a prescribed production variable has no associated default emissions intensity). The inclusion lists, which are presented in this document for consultation and will be included in the *Safeguard Mechanism: Prescribed production variables and default emissions intensities*, will help businesses calculate estimated (site-specific) emissions intensity values.

Defining prescribed production variables and default emissions intensities

The process of defining the production variables and default emissions intensity values has involved extensive stakeholder consultation and independent technical expert review. It was undertaken in accordance with the *Framework for developing default production variables and emissions-intensity value*[2] (the Framework document). The Framework document was consulted on publicly as part of the consultation for the March 2019 amendments to the Safeguard Rule.

Production variables and default emissions intensity values have been reviewed by an independent expert for adherence to the Framework document, including to check that the principles in the Framework document have been applied consistently across sectors.

---

[2] The Framework document is available here: http://www.environment.gov.au/system/files/consultations/56b64cc6-6455-4aa1-9b72-d00b7e09bfb3/files/safeguard-mechanism-rule-amendment-explanatory-document.pdf (see Appendix A).

Production variable definitions and emissions source boundaries

The following sections set out the emissions sources that were either included in or excluded from default emissions intensity calculations, and specify which emissions sources can be included in the calculation of an estimated (site-specific) emissions intensity value for a prescribed production variable. Additional information is provided for most production variables in the mining, oil and gas sectors, as there are a wide variety of facility structures, with many facilities producing multiple products.

Note: Throughout this document, the terms 'on-site' and 'off-site' refer to the site of a facility.

SCHEDULE 2 PRODUCTION VARIABLES

Manufacturing

1. Lime

1.1. Production variable definition

1. Tonnes of lime on a dry weight basis that:
   (a) is produced as part of carrying on the lime production activity at the facility; and
   (b) has a concentration of either or both of calcium oxide (CaO) and magnesium oxide (MgO) equal to or greater than 60% by mass; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing lime through the physical and chemical transformation, through the calcining process, of calcium and magnesium sources (such as calcium carbonate ($CaCO_3$) and magnesium carbonate ($MgCO_3$)) into lime that has a concentration of either or both of calcium oxide (CaO) and magnesium oxide (MgO) equal to or greater than 60% by mass (***the lime production activity***).
3. The default emissions intensity is 1.13 t CO_2-e per tonne of lime.

1.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the direct emissions from machinery, equipment and processes which are integral to, and essential for, the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within and as part of the activity;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or is necessary for the activity to proceed as described; and
  - processing of by-products and waste materials from the activity;
- waste heat recovery within the activity boundary;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- kiln dust production: crushing, grinding and preparation of raw materials contiguous with the equipment required to conduct the transformation as described;
- reject production where this is not recycled in the process; and
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

1.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- extraction of raw materials;
- crushing, grinding and preparation of raw materials not contiguous with the equipment required to conduct the transformation as described;
- processes which do not occur within the facility; and
- on-site electricity generation.

The lime must not be produced as part of an integrated iron and steel manufacturing activity.

The lime must be produced at the facility and be of saleable quality. The tonnes of lime, which are scrapped, lost or discarded are not to be included in the tonnes of reported relevant product.

Additionally, if inputs are transformed into saleable lime which is then recycled prior to being sold, this tonnage should be counted only once for the definition of a relevant product.

Clinker and cement

There are two prescribed production variables for clinker and cement manufacturing. One is for the production of ***clinker*** that is not used by the facility to make cement. The other is for the production of ***cement*** made from clinker produced at a facility.

Definitions

(1) In this Part:

cement means any hydraulic cement, including general purpose and blended cements, meeting the minimum requirements for such cements set out in AS 3972—2010 or any other specific contract and export specifications.

Note: In 2020, AS 3972—2010 was available from http://www.standards.org.au.

Portland cement clinker means the Portland cement clinker resulting from clinker production which:

(a) has a concentration of calcium silicates equal to or greater than 60% by mass; and

(b) has a concentration of magnesium oxide (MgO) equal to or less than 4.5% by mass; and

(c) is useable in the making of Portland cement.

(2) In this Part the activity of ***clinker production*** is the physical and chemical transformation of:

(a) either or both of calcium carbonate compounds (limestone ($CaCO_3$)) and other calcium carbonate ($CaCO_3$) feedstocks; and

(b) any of the following:

(i) clay;

(ii) clay mixed with 1 or more feedstocks that contain 1 or more of the following:

(A) silicon dioxide (SiO_2);

(B) iron (Fe);

(C) aluminium oxide (alumina (Al_2O_3));

(iii) 1 or more feedstocks that, when combined, contain all of the following:

(A) silicon dioxide (SiO_2); and

(B) iron (Fe); and

(C) aluminium oxide (alumina (Al_2O_3));

that are fused together at a temperature above 1000 °C into Portland cement clinker.

2. Clinker

2.1. Production variable definition

(1) Tonnes of Portland cement clinker on a dry weight basis that:

(a) is produced as part of carrying on the clinker production activity at the facility; and

(b) is exported from the facility or allocated for export from the facility (whether the export will occur within or after the reporting year); and

(c) is not used to make cement at the facility; and

(c) is of saleable quality.

(2) The metric in subsection (1) is applicable to a facility that:

(a) conducts the clinker production activity at the facility; and

(b) if the metric in section 65 of this Schedule (the cement production variable) is applicable to the facility—also uses that prescribed production variable.

(3) The default emissions intensity is 0.841 t CO_2-e per tonne of Portland cement clinker.

2.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of on-site machinery, equipment and processes which are integral to, and essential for, the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within and as part of the activity;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where it involves the recovery of materials for re-use within the activity or is necessary for the activity to proceed as described; and
  - onsite processing of waste materials;
- waste heat recovery within the activity boundary;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- crushing, pre-homogenisation and grinding of raw materials that is contiguous with the clinker production process associated with clinker dispatched;
- kiln dust production and reprocessing;
- reject production where this is not recycled in the process; and
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

2.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- extraction of raw materials;
- crushing of raw materials that is not contiguous with the clinker production process;

- production of clinker that is used, or intended to be used, for making cement on-site;
- processes which do not occur within the facility; and
- on-site electricity generation.

3. Cement

3.1. Production variable definition

(1) Tonnes of cement on a dry weight basis that:

(a) is produced as part of carrying out the cement production activity at the facility; and

(b) is attributable to Portland cement clinker produced as part of carrying on the clinker production activity at the facility in accordance with subsection (4); and

(c) is of saleable quality.

(2) The metric in subsection (1) is applicable to a facility that:

(a) conducts the clinker production activity at the facility; and

(b) conducts the activity of producing cement through the physical transformation of Portland cement clinker into cement through a process of comminution with gypsum or other additives (the ***cement production activity***); and

(b) if the metric in section 64 (the clinker production variable) is applicable to the facility—also uses that prescribed production variable.

(3) The default emissions intensity is 0.708 t CO_2-e per tonne of cement.

(4) For subsection (1) cement is attributable to Portland cement clinker produced as part of carrying on the clinker production activity at the facility in accordance with the following equation:

$$\mathrm{Ce_a} = \mathrm{Ce_f} \times \frac{\mathrm{Cl_f}}{\mathrm{Cl_f} + \mathrm{Cl_i}}$$

where:

Ce_a is the cement attributable to Portland cement clinker produced as part of carrying on the clinker production activity at the facility, in tonnes.

Ce_f is the total amount of cement produced at the facility (f) in the reporting year, in tonnes, that is of saleable quality.

Cl_f is the amount of Portland cement clinker, in tonnes, produced as part of carrying on the clinker production activity at the facility (f) in the reporting year and used, or intended to be used, to produce cement at the facility, not including any tonnes of Portland cement clinker counted for the metric in section 64 of this Schedule (the clinker production variable).

Cl_i is the amount of Portland cement clinker, in tonnes, not covered by ***Cl_f*** and imported in the reporting year to produce cement at the facility (whether or not the Portland cement clinker was produced in or outside of Australia).

(4) For paragraphs 4.23C(2)(b) and 4.23D(3)(b) of the NGER Regulations, the following information must be included in a report under the Act in calculating the amount of the prescribed (annually adjusted) production variable for a reporting year:

(a) the total amount of Portland cement clinker produced at a facility in the reporting year (whether or not it is used, exported from the facility or stockpiled); and

(b) the value of each variable in the equation in subsection (4).

3.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of on-site machinery, equipment and processes which are integral to, and essential for, the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within and as part of the activity;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where it involves the recovery of materials for re-use within the activity or is necessary for the activity to proceed as described; and
  - onsite processing of waste materials;
- waste heat recovery within the activity boundary;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- crushing, pre-homogenisation and grinding of raw materials that is contiguous with the clinker production process associated with clinker used for making cement on-site;
- transforming of clinker, both produced on-site and imported, into cement through milling, including the process of comminution with gypsum and other additives;
- kiln dust production and reprocessing;
- reject production where this is not recycled in the process; and
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

3.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- extraction of raw materials;
- crushing of raw materials that is not contiguous with the clinker production process; and
- production of clinker that is not used, or not intended to be used, for making cement on-site;

- processes which do not occur within the facility; and
- on-site electricity generation.

Pipelines

4. Gas distribution

Natural gas distribution is the activity of delivering natural gas to customers through low pressure pipelines with a maximum allowable operating pressure of 1,050 kilopascals or less. The activity does not involve natural gas processing or work of compression applied to natural gas. These facilities should use the *processed natural gas* or *work of compression applied to natural gas or plant condensate* production variables.

Natural gas distribution facilities can include high pressure pipelines (over 1,050 kilopascals) within the boundary of a gas distribution facility. These are technically reported as 'transmission' under NGER, with associated transmission fugitive emissions reported. It is intended that the *kilometres of natural gas transmission pipelines* production variable is applicable to a natural gas distribution facility that has high pressure pipelines which are considered transmission pipelines and reports emissions under Division 3.3.7 of the NGER (Measurement) Determination. This accounts for the fugitive emissions associated with the natural gas transmission pipeline.

4.1. Production variable definition

1. Petajoule-kilometres of natural gas:
   (a) delivered to customers as part of carrying on the natural gas distribution activity at the facility; and
   (b) that is not lost or consumed as part of carrying on the natural gas distribution activity; and
   (c) that is only counted once.

2. The metric in subsection (1) is applicable to a facility that conducts the activity of transporting natural gas through natural gas distribution pipelines to customers (the ***natural gas distribution activity***) and reports emissions under Division 3.3.8 of the NGER (Measurement) Determination.

3. The default emissions intensity is 0.227 t CO_2-e per petajoule-kilometre.

4. The energy content of natural gas:
   (a) must be measured as the higher heating value energy content; and
   (b) may include the energy content of hydrogen included in the natural gas so long as the natural gas mixture meets applicable standards for gas within the network (such as Australian Standard 4564).

In this section:

natural gas has the meaning given by the NGER Regulations.

natural gas distribution pipelines mean pipelines for the conveyance of natural gas that report emissions under Division 3.3.8 of the NGER (Measurement) Determination.

petajoule-kilometre means the multiplication of:
(a) the total energy content, in petajoules, of natural gas delivered to customers by means of a natural gas distribution pipelines which are part of the facility; and

(b) the total length, in kilometres, of the natural gas distribution pipelines used to deliver natural gas to customers as part of the facility as at the end of the relevant financial year.

Note: Natural gas distribution pipelines not used in the delivery of natural gas to customers are not included in these kilometres.

4.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- machinery, equipment and processes which are integral to, and essential for, the natural gas distribution activity, including:
  - distribution piping, including gas mains and service lengths (from the gas main to the customer's meter);
  - equipment at stations constituting part of the distribution system, such as city gate stations, gate stations, regular stations and metering stations;
  - control rooms, gas sampling stations, laboratories, maintenance workshops;
- any flaring, leaks or venting of greenhouse gases associated with the activity, including any reservoir carbon dioxide present in the natural gas;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary;
- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, if they are carried out at the same location as the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

4.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- natural gas transmission in pipelines at a pressure greater than 1,050 kilopascals, upstream of the facility;
- local distribution within the customer's premises downstream of the distribution facility's operational control, which is normally the point of sale to the customer;
- processes which do not occur within the facility; and

- on-site electricity generation.

5. Fugitive emissions from transmission pipelines

This production variable accounts for the fugitive emissions associated with a natural gas transmission pipeline. Natural gas distribution facilities can also include high pressure pipelines (over 1,050 kilopascals) within the boundary of a gas distribution facility. These are technically reported as 'transmission' under NGER, with associated transmission fugitive emissions reported. It is intended that the *kilometres of natural gas transmission pipelines* production variable is applicable to a natural gas distribution facility that has high pressure pipelines which are considered transmission pipelines and reports emissions under Division 3.3.7 of the NGER (Measurement) Determination.

The default emissions intensity value is comprised of the following emissions factors, as per the NGER (Measurement) Determination:

- 0.02 t CO_2-e per kilometre of gas transmission piping associated with carbon dioxide; and
- 10.4 t CO_2-e per kilometre of gas transmission piping associated with methane.

5.1. Production variable definition

1. Kilometres of natural gas transmission pipelines used to deliver natural gas or plant condensate to customers or distribution networks as part of carrying on the natural gas transmission activity at the facility.
2. The metric in subsection (1) is applicable to a facility that conducts the natural gas transmission activity and reports emissions under Division 3.3.7 of the NGER (Measurement) Determination.
3. The default emissions intensity is 10.42 t CO_2-e per kilometre.
4. The kilometres of the natural gas transmissions pipelines must not be greater than the kilometres of pipelines reported under section 3.76 of the NGER (Measurement) Determination for the same financial year.

5.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- Natural gas transmission pipelines at a pressure greater than 1,050 kilopascals, including looping and laterals, upstream of or within a natural gas distribution facility.

5.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- machinery, equipment and processes which are integral to, and essential for, the activity described in the natural gas distribution activity definition, including, for example:

- distribution piping, including gas mains and service lengths (from the gas main to the customer's meter)
- equipment at stations constituting part of the distribution system, such as city gate stations, gate stations, regulator stations and metering stations
- control rooms, gas sampling stations, laboratories, maintenance workshops;

- processes which do not occur within the facility; and
- on-site electricity generation.

Water transport

6. Bulk freight water transport

6.1. Production variable definition

1. Net tonne-kilometres of bulk freight water transport that:
   (a) result from carrying on the bulk freight water transport activity at the facility; and
   (b) relate to the covered emissions of the facility; and
   (c) are not counted in the mixed passenger and freight water transport production variable in section 55 of Schedule 2.

2. The metric in subsection (1) is applicable to a facility that:
   (a) transports bulk freight by water (the ***bulk freight water transport activity***); and
   (b) is in the water freight transport ANZSIC industry classification and code 481.

3. The default emissions intensity is 5.4 x 10^{-6} t CO_2-e per net tonne-kilometre.

4. The relevant kilometres must be measured:
   (a) using the actual distance travelled and recorded on a ship for a voyage; or
   (b) by using an internationally accepted standard distance between the two ports on a voyage.

In this section:

net tonne-kilometres, of bulk freight water transport, are the tonnes of the bulk freight carried on board a ship for a voyage multiplied by the kilometres of the laden voyage.

6.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- direct emissions from transport of bulk freight, including dry and liquid products, by water (laden voyage);
- combustion of fuels and electricity generated on the ship to drive the propulsion system for the purpose of bulk freight water transport;
- electricity generated by the propulsion system of the ship that is consumed on the ship;
- direct emissions from vehicles, machinery and equipment used for supporting bulk freight water transport;
- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, which occur within the facility that is undertaking the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value, such as ballast distance.

6.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generation on the ship that is not sent to the propulsion system of the ship and not consumed on the ship;
- manufacturing process emissions; and
- processes that do not occur within the facility.

Road transport

General definitions

bulk freight is the transport of goods that:

(a) consist of one or more of:

(i) large quantities of a homogenous product; and

(ii) product in shipping containers; and

(iii) uniform types of packaged goods such as bags, pallets and drums; and

(b) are conveyed in road tankers (including ISO tankers), side tipping vehicles, skeletal and flat top trailers, and other road registered vehicles used for carrying bulk materials; and

(c) are generally charged on a weight basis.

cubic tonne is the volume of the freight item (generally height × width × depth) multiplied by a cubic conversion factor (for nominal or actual density) to derive an equivalent net weight.

cubic-tonne-kilometre means the unit of measure representing the movement over a distance of one kilometre of one cubic tonne of freight.

deadweight tonne is a tonne of the carrying capacity of the vehicle including fuel, driver and passengers, provisions and freight, but not including the weight of the prime mover and trailer.

deadweight-tonne-kilometre means the unit of measure representing the movement of a deadweight tonne over a distance of one kilometre.

freight includes a saleable good or transported service (such as crane hire) transported in a road-registered vehicle.

net-tonne-kilometre means the unit of measure representing the movement over a distance of one kilometre of one net tonne of freight.

net tonne, of freight, is the mass of the freighted goods, excluding the mass of the prime mover, trailer, fuel, driver, passengers and provisions.

non-bulk freight is the transport of packaged and pallet loads of freight, that is not bulk freight or specialised and heavy haulage, in vehicles with carrying capacity greater than 4.5 tonnes.

non-bulk (temperature-controlled) freight is the transport of non-bulk freight in temperature controlled conditions, such as by refrigeration, in vehicles with carrying capacity greater than 4.5 tonnes where the power for the temperature control equipment is derived from the drive train.

specialised and heavy haulage is the transportation of either or both of specialised equipment and loads in excess of 200 tonnes on road-registered vehicles that is not bulk freight.

specialised equipment includes:

(a) platform low loaders and trailing equipment capable of carrying loads in excess of 200 tonnes; and

(b) crane and rigging services and lift and shift operations; and

(c) custom engineered trailers for off the road tyre transport; and

(d) equipment for port discharge; and

(e) machines for sleeper transport and positioning; and

(f) equipment and machinery used for transferring freight between the road transport vehicle and another form of transport (such as rail or shipping); and

(g) other similar equipment.

small freight is the transport of goods in road-registered vehicles with a gross vehicle mass of 4.5 tonnes or less.

vehicle delivery is a discrete freight journey between a location where one or more packages are collected and a location where they are delivered, for a single vehicle.

7. Non-bulk freight road transport

7.1. Production variable definition

1. Cubic-tonne-kilometres of non-bulk freight that:
   (a) result from carrying out the non-bulk freight road transport activity at the facility; and
   (b) are not counted for another road transport production variable.
2. The metric in subsection (1) is applicable to a facility that:
   (a) transports non-bulk freight by road in registered vehicles that do not control the temperature of the freight (the ***non-bulk freight road transport activity***)
   (b) is in the road freight transport ANZSIC industry classification and code 461.
3. The cubic-tonne kilometres must be measured consistently with relevant industry practice.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

7.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- combustion of fuels on the road registered vehicle to drive the propulsion system for the purpose of transferring non-bulk freight;
- combustion of fuels on the road registered vehicle for generating electricity to drive the propulsion system for the purpose of transferring non-bulk freight;
- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, if they are carried out at the same location as the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

7.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generated on the road registered vehicle not sent to the propulsion system of the road registered vehicle; and
- processes that do not occur within the facility.

8. Non-bulk freight (temperature-controlled) road transport

8.1. Production variable definition

1. Cubic-tonne-kilometres of non-bulk (temperature controlled) freight that:
   (a) result from carrying out the non-bulk (temperature controlled) freight road transport activity at the facility; and
   (b) are not counted for another road transport production variable.
2. The metric in subsection (1) is applicable to a facility that:
   (a) transports non-bulk (temperature controlled) freight by road in registered vehicles that control the temperature of the freight (the ***non-bulk (temperature controlled) freight road transport activity***)
   (b) is in the road freight transport ANZSIC industry classification and code 461.
3. The cubic-tonne kilometres must be measured consistently with relevant industry practice.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

8.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- combustion of fuels on the road registered vehicle to drive the propulsion system for the purpose of transporting non-bulk (temperature-controlled) freight;
- combustion of fuels on the road registered vehicle for generating electricity to drive the propulsion system for the purpose of transporting non-bulk (temperature-controlled) freight;
- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, if they are carried out at the same location as the activity; and

- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

8.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generated on the road registered vehicle not sent to the propulsion system of the road registered vehicle; and
- processes that do not occur within the facility.

9. Bulk freight road transport

9.1. Production variable definition

1. Net-tonne-kilometres of bulk freight that:
   (a) result from carrying out the bulk road freight transport activity at the facility; and
   (b) are not counted for another road transport production variable.
2. The metric in subsection (1) is applicable to a facility that:
   (a) transports bulk freight by road in registered vehicles (the ***bulk freight road transport activity***); and
   (b) is in the road freight transport ANZSIC industry classification and code 461.
3. The net-tonne kilometres must be measured consistently with relevant industry practice.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

9.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- combustion of fuels on the road registered vehicle to drive the propulsion system for the purpose of transporting bulk freight;
- combustion of fuels on the road registered vehicle for generating electricity to drive the propulsion system for the purpose of transporting bulk freight;
- direct emissions from vehicles, machinery and equipment used for supporting bulk freight transport;

- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, if they are carried out at the same location as the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

9.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generated on the road registered vehicle not sent to the propulsion system of the road registered vehicle; and
- processes that do not occur within the facility.

10. Specialised and heavy haulage

10.1. Production variable definition

1. Deadweight-tonne-kilometres of specialised and heavy haulage freight that:
   (a) result from carrying out the specialised and heavy haulage road transport activity at the facility; and
   (b) are not counted for another road transport production variable.
2. The metric in subsection (1) is applicable to a facility that:
   (a) transports specialised and heavy haulage freight by road in registered vehicles (the ***specialised and heavy haulage road transport activity***); and
   (b) is in the road freight transport ANZSIC industry classification and code 461.
3. The deadweight-tonne kilometres must be measured consistently with relevant industry practice.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

10.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- combustion of fuels on the road registered vehicle to drive the propulsion system for the purpose of specialised and heavy haulage;

- combustion of fuels on the road register vehicle to generate electricity to drive the propulsion system for the purpose of specialised and heavy haulage;
- direct emissions from vehicles, machinery and equipment used for supporting specialised and heavy haulage;
- electricity generated by the propulsion system of the road registered vehicle that is consumed within the road registered vehicle;
- complementary activities, such as head office, administrative and marketing operations, transport for maintenance and inspection, if they are carried out at the same location as the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

10.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generated on the road registered vehicle not sent to the propulsion system of the road registered vehicle; and
- processes that do not occur within the facility.

11. Small freight road transport

11.1. Production variable definition

1. Vehicle-deliveries of small freight that:
   (a) result from carrying out the small freight road transport activity at the facility; and
   (b) are not counted for another road transport production variable.
2. The metric in subsection (1) is applicable to a facility that:
   (a) transports small freight by road in registered vehicles that have a gross vehicle mass (GVM) of 4.5 tonnes or less (the ***small freight road transport activity***); and
   (b) is in the road freight transport ANZSIC industry classification and code 461.
3. The vehicle deliveries must be measured consistently with relevant industry practice.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

11.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- combustion of fuels on the road registered vehicle to drive the propulsion system for the purpose of transferring small freight;
- combustion of fuels on the road registered vehicle for the generation of electricity to drive the propulsion system for the purpose of transferring small freight;
- electricity generated by the propulsion system of the road registered vehicle that is consumed within the road registered vehicle;
- direct emissions from, and electricity use of, vehicles, machinery and equipment used for supporting the road transport activity;
- complementary activities, such as packaging, head office, administrative and marketing operations, which occur within the facility that is undertaking the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

11.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- electricity generated on the road registered vehicle not sent to the propulsion system of the road registered vehicle;
- manufacturing process emissions; and
- processes which do not occur within the facility.

Metal manufacturing

12. Silicon

12.1. Production variable definition

1. Tonnes of silicon (Si) that:
   (a) has a concentration of silicon equal to or greater than 98% by mass; and
   (b) is produced as part of carrying on the silicon production activity at the facility; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing silicon through the chemical transformation of silica (silicon dioxide (SiO_2)) to produce silicon with a concentration of silicon equal to or greater than 98% by mass, conducted in accordance with the overall chemical equation:

   $SiO_2(s)+2C(s) \rightarrow Si(s) +2CO(g)$

   (the ***silicon production activity***).
3. The default emissions intensity is 1.92 t CO_2-e per tonne of silicon.

12.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
  - processing of waste materials from the activity;
- the production of secondary feed-stock products which support the silicon production process (such as charcoal production), where these processes occur within the facility boundary;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary;
- preparation of silicon in order to produce a saleable silicon product; and

- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

12.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- mining, crushing, grinding and milling of silica (silicon dioxide, SiO_2) prior to the smelting process;
- processes that do not occur within the facility boundary; and
- on-site electricity generation.

13. Lead bullion

13.1. Production variable definition

1. Tonnes of lead bullion that:
   (a) has a concentration of lead (Pb) equal to or more than 99% by mass; and
   (b) is produced as part of carrying on the lead bullion production activity at the facility; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing lead bullion through the chemical transformation of concentrated mineralized lead compounds with or without additional lead bearing secondary materials (the ***lead bullion production activity***).

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

13.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;

- machinery used to create non-electrical energy for use in the activity;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
- processing of by-products and waste materials from the activity;

- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

13.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

14. Refined lead

14.1. Production variable definition

1. Tonnes of refined lead that:
   (a) has a concentration of lead (Pb) equal to or more than 99.97% by mass; and
   (b) is produced as part of carrying on the refined lead production activity at the facility; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing refined lead through the chemical transformation of concentrated mineralized lead compounds with or without additional lead bearing secondary materials, into refined lead (the ***refined lead production activity***).

Note: The blasting and sintering processes used in the activity may also treat concentrated mineralised zinc compounds and/or zinc bearing secondary materials.

3. The default emissions intensity is 1.21 t CO_2-e per tonne of refined lead.

14.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
  - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

14.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

15. Zinc in fume

15.1. Production variable definition

1. Tonnes of zinc in fume that:
   (a) has a concentration of zinc (Zn) equal to or more than 60% by mass; and
   (b) is produced as part of carrying on the zinc in fume production activity at the facility; and
   (c) is of saleable quality.

2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing zinc in fume through the chemical transformation in a slag fumer of zinc containing residues and wastes to produce zinc in fume (the ***zinc in fume production activity***).

3. The default emissions intensity is 3.34 t CO_2-e per tonne of zinc in fume.

15.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
    - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
    - control rooms, laboratories, maintenance workshops;
    - machinery used to create non-electrical energy for use in the activity;
    - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
    - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

15.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

16. Caustic calcined magnesia

16.1. Production variable definition

1. Tonnes of caustic calcined magnesia that:
   (a) has a minimum magnesium oxide (MgO) content of 75% by mass; and
   (b) is burned between 650°C and 1200°C; and
   (c) is produced as part of carrying on the magnesia production activity at the facility; and
   (d) is of saleable quality.

Note: Due to the definition of saleable quality, inputs that are transformed into saleable magnesia which is then re-calcined are only counted once.

2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing caustic calcined magnesia through the physical and chemical transformation of magnesite (magnesium carbonate ($MgCO_3$)) in a furnace into caustic calcined magnesia (the ***magnesia production activity***).

Note: Caustic calcined magnesia may also be transformed into deadburned magnesia and electrofused magnesia at the facility, which involves burning or fusing at higher temperatures than in paragraph (1)(b).

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

16.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
  - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

16.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

17. Copper anode

17.1. Production variable definition

1. Tonnes of copper anode that:
   (a) has a copper concentration between 99 and 99.9% by mass; and
   (b) is produced as part of carrying on the copper anode production activity at the facility; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing copper anode through the physical and chemical transformation of copper sulphide concentrates in a smelter to produce copper anodes (the ***copper anode production activity***).

Note: Copper anode is often an input into the production of copper cathode at the same facility.

3. The default emissions intensity is 0.677 t CO_2-e per tonne of copper anode.

17.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;

- processing of by-products and waste materials from the activity;
- production of sulphuric acid;

- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

17.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

18. Manganese sinter

18.1. Production variable definition

1. Tonnes of manganese sinter that:
   (a) has a minimum concentration of manganese (Mn) of 40% by mass; and
   (b) is produced as part of carrying on the manganese sinter production activity at the facility; and
   (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing manganese sinter through the physical and chemical transformation of small particles of manganese ore by sintering into manganese sinter (the ***manganese sinter production activity***).

Note: Manganese sinter is often an input into an electric arc furnace.

3. The default emissions intensity is 0.242 t CO_2-e per tonne of manganese sinter.

18.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
    - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
    - control rooms, laboratories, maintenance workshops;
    - machinery used to create non-electrical energy for use in the activity;
    - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
    - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

18.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

19. Ferromanganese alloy

19.1. Production variable definition

1. Tonnes of ferromanganese alloy that:
    (a) has a minimum concentration of manganese (Mn) of 67% by mass; and
    (b) is produced as part of carrying on the ferromanganese production activity at the facility; and
    (c) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing ferromanganese alloy through the physical and chemical transformation of manganese ore or sinter into ferromanganese alloy (the ***ferromanganese production activity***).

3. The default emissions intensity is 1.30 t CO_2-e per tonne of ferromanganese alloy.

19.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
  - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

19.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

20. Silicomanganese alloy

20.1. Production variable definition

1. Tonnes of silicomanganese alloy that:
   (a) has a minimum concentration of manganese (Mn) of 60% by mass; and
   (b) has a minimum concentration of silicon (Si) of 12% by mass; and

(c) is produced as part of carrying on the silicomanganese production activity at the facility; and

(d) is of saleable quality.

2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing silicomanganese through the physical and chemical transformation of one or more of manganese ore, manganese sinter or ferromanganese slag produced at the facility into silicomanganese alloy (the ***silicomanganese production activity***).

3. The default emissions intensity is 1.70 t CO_2-e per tonne of silicomanganese alloy.

20.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
  - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
  - control rooms, laboratories, maintenance workshops;
  - machinery used to create non-electrical energy for use in the activity;
  - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
  - processing of by-products and waste materials from the activity;
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

20.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

Nickel manufacturing

There are three prescribed production variables for nickel manufacturing. One is for the production of ***intermediate nickel products*** that do not undergo further processing at the facility. The other two production variables are both for the production of ***primary nickel products***, but distinguished on the inputs to the manufacturing process, which are either ***intermediate nickel products*** or ***nickel bearing inputs***.

The production of intermediate and primary nickel products through the chemical and physical transformation of nickel bearing inputs and intermediate nickel products is grouped together in the ***nickel manufacturing activity***. This avoids duplication of processes in the inclusions and exclusions list.

General definitions

intermediate nickel products mean:

(a) nickel matte;

(b) mixed nickel-cobalt hydroxide precipitate where the concentration of nickel is between 35 and 47% (inclusive) by mass;

(c) mixed nickel-cobalt sulphide precipitate where the concentration of nickel is between 43 and 57% (inclusive) by mass;

(d) basic nickel carbonate where the concentration of nickel is between 40 and 45% (inclusive) by mass;

(e) crude nickel sulphate where the concentration of nickel is equal to or greater than 21% (inclusive) by mass.

imported intermediate nickel products, *for a facility, means an intermediate nickel product not produced at the facility.*

nickel bearing inputs mean:

(a) mineralised nickel ores (including laterite or sulphide ores);

(b) nickel sulphide concentrates;

(c) other nickel containing concentrates that have not undergone secondary processing;

(d) low grade nickel waste products that require equivalent processing to mineralised nickel ores.

primary nickel products mean:

(a) basic nickel carbonate where the concentration of nickel is equal to or greater than 50% nickel by mass;

(b) nickel oxide where the concentration of nickel is equal to or greater than 78% nickel by mass;

(c) nickel sulphate hexahydrate ($NiSO_4.6H_20$) where the concentration of nickel is equal to or greater than 22% nickel by mass;

(d) other nickel products that have a concentration of nickel equal to or greater than 98% nickel by mass.

The following inclusions and exclusions list applies to the ***nickel manufacturing*** activity:

Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for the production variables in the nickel manufacturing activity, scope 1 emissions from the following processes at the facility are included:

- the use of machinery, equipment and processes for the physical and/or chemical transformation described in the activity definition, including, for example:
    - machinery used to move materials within the facility and as part of the activity, including mobile equipment;
    - control rooms, laboratories, maintenance workshops;
    - machinery used to create non-electrical energy for use in the activity;
    - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
    - processing of by-products and waste materials from the activity,
- waste heat recovery within the facility;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only or apportion those emissions among production variables on a justifiable basis.

Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

21. Primary nickel product (produced from nickel bearing inputs)

21.1. Production variable definition

1. Tonnes of 100% equivalent nickel that:
    (a) is contained within primary nickel products that:

a. are produced from nickel bearing inputs as part of carrying on the nickel manufacturing activity at the facility; and

b. are of saleable quality; and

(b) has not been counted in relation to the intermediate nickel product production variable at the facility.

2. The metric in subsection (1) is applicable to a facility that conducts the ***nickel manufacturing*** activity.

3. The default emissions intensity is 8.78 t CO_2-e per tonne of 100% equivalent nickel.

22. Primary nickel product (produced from imported intermediate nickel products)

22.1. Production variable definition

1. Tonnes of 100% equivalent nickel contained within primary nickel products that:

   (a) are produced from imported intermediate nickel products as part of carrying on the nickel manufacturing activity at the facility; and

   (b) are of saleable quality.

2. The metric in subsection (1) is applicable to a facility that conducts the ***nickel manufacturing*** activity.

3. The default emissions intensity is 2.52 t CO_2-e per tonne of 100% equivalent nickel.

23. Intermediate nickel product (produced from nickel bearing inputs)

23.1. Production variable definition

1. Tonnes of 100% equivalent nickel contained within intermediate nickel products that:

   (a) are produced from nickel bearing inputs as part of carrying on the nickel manufacturing activity at the facility; and

   (b) are not, and are not intended to be, transformed into primary nickel products at the facility; and

   (c) are of saleable quality.

2. The metric in subsection (1) is applicable to a facility that conducts the ***nickel manufacturing*** activity.

3. The default emissions intensity is 1.76 t CO_2-e per tonne of 100% equivalent nickel.

Mining

24. Non-metallic mineral quarrying

24.1. Production variable definition

1. Tonnes of quarried rock that:
   (a) contains 1 or more minerals that are not metals; and
   (b) is produced as part of carrying on the non-metallic mineral quarrying activity at the facility; and
   (c) is either:
      a. of saleable quality at the mine; or
      b. suitable as a feed source of 1 or more non-metallic minerals for production of other processed products; and
   (d) has not been counted for another production variable at the facility; and
   (e) is not eligible to be a prescribed production variable for the metal ore or coal mining sectors.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of quarrying non-metallic minerals through:
   (a) the physical extraction of rock containing 1 or more minerals that are not metals; and
   (b) the processing of the extracted rock to produce a non-metallic mineral product or feedstock material, such as aggregates for the construction industry.
3. The activity in subsection (2) is the ***non-metallic mineral quarrying activity***.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

24.2. Scope of the activity

The activity includes the processes required to extract the non-metallic rock, as well as basic on-site processing of the extracted material to make it suitable as a feedstock or final product. Typical quarried products are aggregates for the construction industry as well as stones such as limestone, sandstone, marble and granite.

Quarrying involves the removal and storage of overburden material to allow access to the minerals. The overburden and rock are quarried using drill and blasting techniques to break up the materials to allow extraction, usually via excavator loading into trucks.

The primary source of scope 1 emissions is the combustion of liquid fuel – usually diesel – used in excavators, bulldozers, haul trucks and stationary diesel engines for electricity generation.

Emissions from blasting include the oxidation of hydrocarbons mixed with other materials, usually ammonium nitrate, to generate the explosive reaction.

Movement of waste material associated with the quarry is covered by the production variable, as is the development processes required to allow extraction of the quarried material, including land clearing and removal and storage of topsoil for later use.

Crushing and screening of the rock to remove waste material may be needed to ensure the product is suitable as a feedstock at the same facility or for off-site transport. These processes are generally electrically driven.

24.3. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- the use of on-site machinery, equipment and processes for the extraction and treatment of the rock described in the activity definition, including, for example:
    - machinery used to prepare and remove topsoil and overburden to allow quarrying;
    - machinery used to move materials within the facility, including mobile equipment;
    - control rooms, laboratories, maintenance workshops;
    - machinery used to create non-electrical energy for use in the activity;
    - the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
    - processing of by-products and waste materials from the activity;
- waste heat recovery within the activity;
- the supply of utilities such as, but not limited to, natural gas used in heating baths, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundary
- drilling and blasting using explosives and other equipment;
- transportation of inputs used in the activity to storage at the facility, where the transport activity wholly occurs within the facility;
- transportation of the output of the activity from storage at the facility, where the transport activity wholly occurs within the facility;
- complementary processes, such as packaging, head office, administrative and marketing operations, which occur within the boundary of the facility that is undertaking the activity; and
- other incidental, ancillary or supporting processes which are not included in another default or estimated emissions intensity value.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

24.4. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- processes which do not occur within the facility; and
- on-site electricity generation.

Pulp and paper manufacturing

25. Tissue paper manufacturing

25.1. Production variable definition

1. Tonnes of rolls of uncoated tissue paper that:
   (a) has a grammage range of 13 g/m^2 to 75 g/m^2; and
   (b) has a moisture content in the range of 4% to 11% by mass; and
   (c) is generally useable in sanitary products such as facial tissue, paper towel, bathroom tissue and napkins; and
   (d) has not been counted for another production variable at the facility; and
   (e) is produced as part of carrying on the tissue paper manufacturing activity at the facility; and
   (f) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing rolls of uncoated tissue paper through the physical or chemical transformation of any or all of wood chips, sawdust, wood pulp and recovered paper into rolls of uncoated tissue paper that:
   (a) has a grammage range of 13 g/m^2 to 75 g/m^2; and
   (b) has a moisture content in the range of 4% to 11% by mass; and
   (c) is generally useable in sanitary products such as facial tissue, paper towel, bathroom tissue and napkins; and
   (d) is of saleable quality.
3. The activity in subsection (2) is the ***tissue paper manufacturing*** activity.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

25.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- handling, storing and treating purchased pulp;
- the paper making process from receipt of pulp and up to and including the finishing, packaging andstoring the final paper products (including products that have been further refined from the production variable definition of rolls of paper product);
- the treatment of wastewater generated from the paper-making operations;
- on-site transport of paper products;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;

- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- complementary processes, such as packaging, head office, administrative and marketing operations where they are undertaken at the site of the facility;
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

25.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- on-site electricity generation
- processes that do not occur within the facility;
- processes that are included in the definition of another production variable, e.g. pulp manufacture.

26. Packaging and industrial paper manufacturing

26.1. Production variable definition

1. Tonnes of rolls of packaging and industrial paper that:
   (a) is produced from wholly or partially unbleached input fibre; and
   (b) has a grammage range of 30 g/m^2 to 500 g/m^2; and
   (c) has a moisture content in the range of 4% to 11% by mass; and
   (d) is uncoated; and
   (e) is generally useable as a packaging or industrial paper, including products such as kraft liner, recycled or multiply liner, medium, sack and bag paper, wrapping paper, plasterboard liner, horticultural paper and building paper; and
   (f) has not been counted for another production variable at the facility; and
   (g) is produced as part of carrying on the packaging and industrial paper manufacturing activity at the facility; and
   (h) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing rolls of packaging and industrial paper through physical or chemical transformation of any or all of wood chips, sawdust, wood pulp and recovered paper into packaging and industrial paper that:
   (a) is produced from wholly or partially unbleached input fibre; and

(b) has a grammage range of 30 g/m^2 to 500 g/m^2; and

(c) has a moisture content in the range of 4% to 11% by mass; and

(d) is uncoated; and

(e) is generally useable as a packaging or industrial paper, including products such as kraft liner, recycled or multiply liner, medium, sack and bag paper, wrapping paper, plasterboard liner, horticultural paper and building paper; and

(f) is of saleable quality.

3. The activity in subsection (2) is the ***packaging and industrial paper manufacturing activity***.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

26.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- handling, storing and treating purchased pulp;
- the paper making process from receipt of pulp and up to and including the finishing, packaging and storing the final paper products (including products that have been further refined from the production variable definition of rolls of paper product);
- the treatment of wastewater generated from the paper-making operations;
- on-site transport of paper products;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- complementary processes, such as packaging, head office, administrative and marketing operations where they are undertaken at the site of the facility;
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

26.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- on-site electricity generation
- processes that do not occur within the facility
- processes that are included in the definition of another production variable, e.g. pulp manufacture

27. Printing and writing paper manufacturing

27.1. Production variable definition

1. Tonnes of rolls of coated or uncoated printing and writing paper that:
   (a) is produced from 100% bleached or brightened input fibre; and
   (b) has a grammage range of 42 g/m^2 to 350 g/m^2; and
   (c) has a moisture content in the range of 4% to 11% by mass; and
   (d) is generally useable as a printing and writing paper product, including products such as offset paper, copy paper, laser printing paper, magazine paper, filing card paper, manilla, book printing paper, envelope paper, forms paper, scholastic paper, cheque paper and security paper; and
   (e) has not been counted for another production variable at the facility; and
   (f) is produced as part of carrying on the printing and writing paper manufacturing activity at the facility; and
   (g) is of saleable quality.
2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing rolls of coated or uncoated printing and writing paper through physical or chemical transformation of any or all of wood chips, sawdust, wood pulp and recovered paper into rolls of coated or uncoated printing and writing paper that:
   (a) is produced from 100% bleached or brightened input fibre; and
   (b) has a grammage range of 42 g/m^2 to 350 g/m^2; and
   (c) has a moisture content in the range of 4% to 11% by mass; and
   (d) is generally useable as a printing and writing paper product, including products such as offset paper, copy paper, laser printing paper, magazine paper, filing card paper, manilla, book printing paper, envelope paper, forms paper, scholastic paper, cheque paper and security paper; and
   (e) is of saleable quality.
3. The activity in subsection (2) is the ***printing and writing paper manufacturing activity***.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

27.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- handling, storing and treating purchased pulp;
- the paper making process from receipt of pulp and up to and including the finishing, packaging and storing the final paper products (including products that have been further refined from the production variable definition of rolls of paper product);
- the treatment of wastewater generated from the paper-making operations;
- on-site transport of paper products;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- complementary processes, such as packaging, head office, administrative and marketing operations where they are undertaken at the site of the facility;
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

27.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- on-site electricity generation
- processes that do not occur within the facility
- processes that are included in the definition of another production variable, e.g. pulp manufacture

28. Newsprint manufacturing

28.1. Production variable definition

1. Tonnes of rolls of uncoated newsprint that:
   (a) has a grammage range of 30 g/m^2 to 80 g/m^2; and
   (b) has a moisture content range of 4% to 11% by mass; and
   (c) is generally usable for newspaper or publication products; and

(d) has not been counted for another production variable at the facility; and

(e) is produced as part of carrying on the newsprint manufacturing activity at the facility.

2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing rolls of uncoated newsprint through the chemical and physical transformation, using an integrated process, of any or all of woodchips, sawdust, wood pulp and recovered paper into rolls of uncoated newsprint that:

   (a) has a grammage range of 30 g/m^2 to 80 g/m^2; and

   (b) has a moisture content range of 4% to 11% by mass; and

   (c) is generally usable for newspaper or publication products

3. The activity in subsection (2) is the ***newsprint manufacturing activity***.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

28.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- handling, storing and treating purchased pulp;
- the paper making process from receipt of pulp and up to and including the finishing, packaging and storing the final paper products (including products that have been further refined from the production variable definition of rolls of paper product);
- the treatment of wastewater generated from the paper-making operations;
- on-site transport of paper products;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- complementary processes, such as packaging, head office, administrative and marketing operations where they are undertaken at the site of the facility;
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

28.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- on-site electricity generation
- processes that do not occur within the facility
- processes that are included in the definition of another production variable, e.g. pulp manufacture.

29. Pulp manufacturing

29.1. Production variable definition

1. Tonnes of wet or dry pulp that:
   (a) is generally useable in one or more of:
      i) paper manufacturing;
      ii) packaging and cardboard manufacturing;
      iii) newsprint manufacturing;
      iv) tissue paper manufacturing; and
      v) the production of sanitary products (such as a fluff pulp layer in sanitary products); and
   (b) is measured according to ordinary measurement rules applicable in the industry; and
   (c) if wet pulp—is converted to an air dried basis; and
   (d) is produced as part of carrying on the pulp production activity at the facility.

Note: The quantity of pulp is generally converted to an air dried basis by adjusting the relevant tonnes to their mass with a moisture content of 10% (without drying the relevant wet pulp product).

2. The metric in subsection (1) is applicable to a facility that conducts the activity of producing pulp through the physical or chemical transformation of any or all of wood chips, sawdust, wood pulp and recovered paper into wet or dry pulp that is generally usable in one or more of the following:
   (a) paper manufacturing;
   (b) packaging and cardboard manufacturing;
   (c) newsprint manufacturing;
   (d) tissue paper manufacturing; and
   (e) the production of sanitary products (such as a fluff pulp layer in sanitary products).

3. The activity in subsection (2) is the ***pulp production activity***.

Note: The default emissions intensity for this prescribed production variable is yet to be calculated and specified in the Schedule.

29.2. Inclusions

For the purposes of the development of the default emissions intensity value and the preparation of an estimated (site-specific) emissions intensity value for this production variable, scope 1 emissions from the following processes at the facility are included:

- handling, storing and treating of pulp feedstock;
- the pulp making process from receipt of materials and up to and including the drying, packaging and storing the final pulp products (if being sold);
- the treatment of wastewater generated from the paper-making operations;
- on-site transport of pulp products;
- the processing of by-products where they involve the recovery of materials for re-use within the activity or are necessary for the activity to proceed as described;
- the supply of utilities such as, but not limited to, compressed air, nitrogen, steam and water where these are used in support of the activity and within the activity boundaries;
- complementary processes, such as packaging, head office, administrative and marketing operations where they are undertaken at the site of the facility;
- other incidental, ancillary or supporting processes which are not included in the definition of another production variable.

It is intended that all Scope 1 NGER-reported emissions from a facility can be assigned to a production variable, but where a facility produces multiple products, emissions cannot be counted more than once.

When calculating estimated (site-specific) emissions intensity values, a facility can assign emissions which do not relate to a specific output either to one production variable only, or apportion those emissions among production variables on a justifiable basis.

29.3. Exclusions

Scope 1 emissions from the following processes were not included in the default emissions intensity calculation for this production variable, and must be excluded from the calculation of an estimated (site-specific) emissions intensity value for the production variable:

- on-site electricity generation
- processes that do not occur within the facility
- processes that are included in the definition of another production variable, e.g. paper manufacture