

18. Abbreviations

Abbreviation	Definition
A	
a	annum
A	Acid stage in bleaching, area
A&NZ	Australian and New Zealand
AA	active alkali, AA=NaOH+Na ₂ S
AAPC	Australian Aluminium Production Commission (now Comalco)
AAS	Australian Amalgated Stevedores
ABS	Australian Bureau of Statistics
ADI	Acceptable daily intake
ADt	Air (90%) dry tonne
ADt/a	Air dry tonnes per annum
ADtbl	Air (90%) dry ton, bleached
AET	Alliance for Environmental Technology
AFS	Australian Forestry Standard
AGSO	Australian Geological Survey Organisation
AGV	Air guideline value
AHD	Australian Height Datum
Al	Aluminium
Al ₂ (SO ₄) ₃	Aluminium sulphate (alum)
ALARP	As low as reasonably practical
AMC	Australian Maritime College
AMSA	Australian Maritime Safety Authority
AMT	Accepted modern technology
ANOVA	Analysis of Variance
ANZECC	Australia and New Zealand Environmental Conservation Council
AOX	Absorbable organic halogens
APIA	Australian Petroleum Industry Association
AQ	Anthraquinone
AQIS	Australian Quarantine and Inspection Service
AQMS	Air Quality Monitoring Station
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AS	Australian Standard
ASL	Above sea level
ASS	Acid Sulphate Soils
ATSDR	Agency for Toxic Disease Registry (United States)
AUD	Australian dollar
B	
bar(a)	Pressure (absolute)
bar(g)	Pressure (gauge)
BAF	Bioaccumulation factor
BAT	Best available technology
BCC	Bioaccumulative chemicals of concern
BCF	Bioconcentration factor
BCTMP	Bleached chemi-mechanical pulp
BDS	Bone dry solids
BDt	Bone (100 %) dry tonne
BDU	Bone dry unit
BEK	Bleached eucalyptus kraft
BEKP	Bleached eucalypt kraft pulp

Abbreviation	Definition
BFB	Bubbling fluidised bed combustion boiler
BFP	BFP Consultants Pty Ltd
BHKP	Bleached hardwood kraft pulp
BKME	Bleached Kraft mill effluent
BKP	Bleached Kraft pulp
BL	Black liquor
BLEVE	Boiling liquid expanding vapor explosion
BMF	Biomagnification factor
BOD	Biological oxygen demand
BOD ₅	Biological oxygen demand, five day test, SCAN-W 5:71
BOM	Bureau of Meteorology
BoP	Balance of plant
Boral	Boral Forest Resources
BP	Before present
BPEM	Best practice environmental management
BPR	Boiling point rise
BPT	Best practicable technology
BSAF	Biota-to-sediment accumulation factor
BSKP	Bleached softwood Kraft pulp
BSS	Bed shear stress
BTEX	Butyl, Toluene, Ethylene, Xylene
BTRE	Bureau of Transport and Regional Economics
BW	Body weight
BWDSS	Ballast Water Decision Support System
C	
C	Chlorination stage in bleaching, carbon, concentration
°C	Celsius-degree
C _{BS}	Bed sediment bulk density
C _F	COPC Concentration in fish
C _{Fish}	Concentration of contaminant in fish
C _{Fish n}	Contaminant concentration in top predator fish
C _i	Total concentration of a chemical in whole organism/tissue divided by the lipid fraction
C _s	Total concentration of a chemical in sediment
C _{sb}	Concentration of contaminant sorbed to bottom (bed) sediment
C _{soc}	Total concentration of a chemical in sediment divided by the fraction of organic carbon in sediment.
C _{w tot}	Total water concentration
Ca ₂ CO ₃	Calcium carbonate (lime stone)
CAGR	Compound annual growth rate
Ca(HSO ₃) ₂	Calcium bisulphite
Ca(OH) ₂	Calcium hydroxide
CAMBA	Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment
CaO	Calcium oxide (burnt lime)
CAR	Comprehensive, Adequate, Representative
CCT	Corrugated crush test (edgewise compression strength measurement)
CCTV	Closed-circuit television system
CE	CE marking (product meets the requirements of all relevant European Directives)
CEMP	Construction Environmental Management Plan
CEN	Committee Europé de Normalisation
CEO	Chief Executive Officer
CFCs	Chlorofluorocarbons
CGE	Computable general equilibrium

Abbreviation	Definition
(CH ₃) ₂ S	Di-methyl sulphide
(CH ₃) ₂ S ₂	Di-methyl disulphide
CH ₃ SH	Methanethiol
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
Cl ₂	Chlorine (gas)
ClO ₂	Chlorine dioxide (gas)
CMT	Crisis Management Team
CNCG	Concentrated non-condensable gases
CO	Carbon monoxide
CoA	Co-enzyme A
CoC	Chain of Custody
CO(NH ₂) ₂	Urea
CO ₂	Carbon dioxide
CO ₃	Carbonate
COD	Chemical oxygen demand
COD _{cr}	COD, chromium measurement method
COPC	Chemical of potential concern
CR	Consumption rate
CRA	Comprehensive Regional Assessment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
D	
d	day(s)
D	Chlorine dioxide stage in bleaching
D _i	Daily intake of contaminant
d _{bs}	Depth of upper benthic sediment layer
d _{wc}	Depth of water column
D0	First chlorine dioxide stage in bleaching
D1	Second chlorine dioxide stage in bleaching
D2	Third chlorine dioxide stage in bleaching
dB	Decibel
dB(A)	Sound pressure level units (A scale)
DCS	Distributed control system; data collection system
DD	Drum displacement (washer); double disc (refiner)
DDE	Dichloro-diphenyl-ethane
DDT	Dichloro-diphenyl-trichloroethane
DEH	Commonwealth Department of Environment and Heritage
DELM	Department of Environment and Land Management
DEM	Digital elevation model
DF	Dilution factor
dia	Diameter
DIAR	Draft Integrated Assessment Report
DIER	Department of Infrastructure, Energy and Resources
dm ³	Cubic decimetre
DMS	Dimethyl sulphide; document management system
DN	Diameter nominal (pipes)
DNCG	Diluted non-condensable gases
DO	Dissolved oxygen
DPHTA	Tasmanian Department of Parks, Heritage, Tourism and the Arts
DPIWE	Tasmanian Department of Primary Industry, Water and Environment
DR	Displacement ratio
DS	Dry solid; dissolved solid; degree of substitution
DTAE	Tasmanian Department of Tourism, Arts and the Environment

Abbreviation	Definition
DTPA	Diethylene triamine penta acetate
DVD	Digital versatile disk
DWT	Dead weight tonne
E	
E	Alkaline extraction stage in bleaching; E-value (washing efficiency)
EA	Effective alkali, EA=NaOH+1/2Na ₂ S
EC	Electrical conductivity; Environment Canada
ECL	Electrical conductivity level
EC ₅₀	Chronic toxicity- median effective concentration (required to induce a 50% effect)
ECF	Elemental chlorine free
EDD	Electronic device description
EDTA	Ethylenediamine tetraacetic acid
EEC	Exclusive Economic Zone
EFTPOS	Electronic Funds Transfer at Point Of Sale
EHV	Extra high voltage
EIA	Environmental Impact Assessment
EIL	Environmental investigation level
EIP	Environmental Improvement Programs
EMP	Environmental Management Plan
EMPCA or EMPC Act	Tasmanian <i>Environmental Management and Pollution Control Act 1994</i>
EMS	Environmental Management System
EOP	Oxygen and peroxide enhanced alkali extraction stage in bleaching
EPA	Environmental Protection Agency (or Authority)
EPBCA or EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPNs	Environment Protection Notices
EPP	Environment Protection Policy
ER	Environmental Representative
ERP	Enterprise resource planning; emergency response plan
ESA	Commonwealth <i>Endangered Species Act 1992</i>
ESD	Ecologically sustainable development
ESFM	Ecologically sustainable forest management
ESP	Electrostatic precipitator
ETM	Elaborately transformed manufactures
ETP	Effluent treatment plant
EU	European Union
EVCs	Ecological Vegetation Communities
F	
f _l	Lipid fraction
f _{oc}	Fraction of organic carbon in sediment
f _{bc}	Fraction of total water body contaminant concentration sorbed to bed sediment
FAO	Food and Agriculture Organization of the United Nations
FBE	Fusion bonded epoxy
FCM	Trophic level-specific food chain multiplier
FEA	Forest Enterprises Australia Ltd
FEP	Permanent easement
FIAR	Final Integrated Assessment Report
FIBC	Flexible Intermediate Bulk Containers
Flyway, the	East Asia – Australasian flyway
FPA	Tasmanian <i>Forest Practices Act 1985</i>
FPP	Forest Practises Plan
ft	Foot/feet

Abbreviation	Definition
FW	Feed water
[fish]	Contaminant concentration in fish tissue
G	
g	Gram
GBE	Government Business Enterprise
g/l	Grams per litre
GC	Gas
GDP	Gross domestic product
GHD	Gutteridge, Haskins & Davey (GHD) Pty Ltd consultancy firm
GHG	Greenhouse gas emission
GIS	Gas insulated switchgear
GIS	Geographic Information System
GJ	giga joule
GI or GL	giga litre
GLC	Ground level concentration
GLOSS	Global Sea Level Observing System
GMt	Green metric tonnes
GPT	Gross pollutant traps
GRP	Glass-fibre reinforced thermosetting plastics
GSP	Gross State Product
Gunns	Gunns Limited
GWP	Global warming potential
H	
h	Hour; height
H ₂ O ₂	Hydrogen peroxide
H ₂ S	Hydrogen sulfide
H ₂ SO ₄	Sulphuric acid
H ₃ PO ₄	Phosphoric acid
ha	Hectares
HAZID	Hazard identification
HAZOP	Hazard and operability study
HBL	Hot black liquor
HC	High consistency
HCB	Hexachlorobenzene
HCl	Hydrochloric acid
HD	High density
HDD	Horizontal directional drilling
HDPE	High density polyethylene
HEC	Hydro-Electric Corporation
HERB	High energy recovery boiler
HHRA	Human Health Risk Assessment
HHV	Higher heating value
HI	Hazard index
HNO ₃	Nitric acid
HOCl	Hypochlorous Acid
HP	High pressure (steam); horse power
HQ	Hazard quotient
HRA	Health risk assessment
HVAC	Heating, ventilation and air conditioning
HVLC	High volume, low concentration (diluted odorous gases)
HW	Hardwood
HWL	Hot white liquor
Hz	Hertz

Abbreviation	Definition
I	
I	Iodine
I _{Fish}	Daily human intake of fish
I/O	Input/output
ID	Induced-draft (fan)
IDP	Integrated chlorine dioxide plant
IIS	Integrated Impact Statement
IMO	International Maritime Organisation
INP	Industrial Noise Policy
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated pollution prevention control
ISO	International Standard Organisation, http://www.iso.org
ISQG High	Interim Sediment Quality Guideline High
ISQG Low	Interim Sediment Quality Guideline Low
IUCN	World Conservation Union
IWC	International Whaling Commission
J	
JAMBA	Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment
JAS-ANZ	Joint Accreditation System for Australia and New Zealand
JP	Jaakko Poyry Oy
K	
K	Potassium; Kelvin; dissociation constant
K _{ow}	Log oil: water partition coefficient
KCl	Potassium chloride
Kd _{bs}	Bed sediment/sediment pore water partition coefficient
kg	Kilogram
kL	Kiloliters
km	Kilometres
KmnO ₄	potassium permanganate
KP	Kilometre points
KPI	Key Performance Indicators
kV	Kilovolt
kVa	Kilovolt amps
kWh	Kilowatt hour
L	
L	Litres
L/W	Liquor-to-wood ratio
LAT	Low astronomical tide
LC	Low consistency
LC ₅₀	Lethal concentration 50 (concentration in water having 50 % chance of causing death to aquatic life)
LC ₅₀ /EC ₅₀	Acute toxicity
LCS	Laboratory control sample
LEL	Lower explosive limit
LGAs	Local Government Areas
LGM	Last Glacial Maximum
LHV	Recovery boiler efficiency, low heating (heat) value
LOEC	Lowest Observed Effect Concentration
London Convention	Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matter, 1972
LOR	Limit of reporting
LOS	Level of service
LP	Low pressure (steam, ~ 4 bar)

Abbreviation	Definition
LPG	Liquid petroleum gas
LUPAA or LUPA Act	Tasmanian <i>Land Use Planning and Approvals Act</i>
LVHC	Low volume high concentration (gases)
LWHRP	Launceston Wood Heater Replacement Program
M	
m	Metres
m ²	Square metres
m ³	Cubic metres
m ³ /s	Cubic metres per second
m ³ /s	Cubic metres per second
m ³ /y	Cubic metres per year
m ³ l	Cubic metre loose
m ³ sob	Cubic metre solid over bark
MAOP	Maximum available operating pressure
MARPOL	International Convention for the Prevention of Pollution from Ships
MAST	Marine and Safety Tasmania
max	Maximum
MBACI	Monitoring before, after, control and impact
MBAS	Methylene blue active substances
MBB	Moving biological bed technology (reactor)
MC	Medium consistency; moisture content
MCC	Motor control centre; modified continuous cooking
MCR	Maximum continuous rating (load)
MDF	Medium density fibreboard
MDL	Method detection limits
MDS	Multi-dimensional scaling
MEI	Mechanical, electrical and instrumentation
MeOH	Methanol
MEPC	Marine Environment Protection Committee
MES	Manufacturing execution system
MF	Machine finished
MFDP	Marine Farming Development Plan
MFPA	Tasmanian <i>Marine Farming Planning Act 1995</i>
MG	Machine glazed
mg	Milligram
Mg(HSO ₃) ₂	Magnesium bisulphate
MgO	Magnesium oxide
MgSO ₃	Magnesium sulphite
MgSO ₄	Magnesium sulphate
MHA	Member of House of Assembly
MIC	Maximum instantaneous charge
min	Minimum; minute
MJ	Mega joule
MJ/kgDS	Mega joule per kilogram of dry solids
MJ/s	Mega joules per second
MJ/scm	Mega joule per standard cubic metre
ML	Mega litres
ML/d or ML/day	Mega litres per day
MLSS	Mixed liquor suspended solids
MLVSS	Mixed liquor volatile suspended solids
mm	Millimetres
MMP	Mitigation Management Plan

Abbreviation	Definition
MMRF	Monash Multi-Region Forecasting
MMS	Maintenance management system
Mn	Manganese
MnO	Manganese oxide
Montreal Convention	Montreal Protocol on Substances that Deplete the Ozone Layer 1987
MP	Medium pressure (steam, ~ 12 bar)
MP	Member of Parliament
Mpa	mega Pascal (pressure)
MPA	Marine Protected Area
MRT	Mineral Resources Tasmania
MS	micro Siemens; matrix spike
MSD	Matrix spike duplicate
MSDS	Material Safety Data Sheet
MVA	mega watt ampere
MVR	Mechanical vapour recompression
MW	Megawatt
MWC	Medium weight coated (paper)
MWWB	Mill Wide Water Balance
N	
Na ₂ O	Sodium oxide
Na ₂ S	Sodium sulphide
Na ₂ S ₂ O ₃	Sodium tiosulphate
Na ₂ S ₂ O ₄	Hydrosulphite (dithionite)
Na ₂ SO ₃	Sodium sulphite
Na ₂ SO ₄	Sodium sulphate
NaCl	Sodium chloride
NaClO ₃	Sodium chlorate
NaCO ₃	Sodium carbonate
NaHSO ₃	Sodium bisulphite
NaOH	Sodium hydroxide
NAS	National Academy of Sciences
NATA	Australian National Association of Testing Authorities
NCG	Non-condensable gas
NCTC	National Counter-Terrorism Committee
NE	North east
NEPC	National Environment Protection Council
NEPMs	National Environment Protection Measures
NFPS	National Forest Policy Statement 1992
NGO	Non-Government Organisation
NGS	National greenhouse strategy
(NH ₄)HSO ₃	Ammonium bisulphite
(NH ₄)SO ₃	Ammonium sulphite
NH ₂ SO ₃ H	Sulfaminacid
Nm ³	Normal cubic meter (gases)
nm	Nautical miles
NNE	North-north-east
NNW	North-north-west
North	North Forest Products
NOEC	No Observed Effect Concentration
NOx	Nitrogen oxides
NPI	National Pollutant Inventory
NPV	Net present value

Abbreviation	Definition
NPW	Tasmanian <i>National Parks and Wildlife Act 1970</i>
NRM	Natural Resource Management
NSW DEC	New South Wales Department of Environment and Conservation
NSW RTA	New South Wales Road Traffic Authority
NTRDB	Northern Territory Development Board
NTU	Normal (nephelometric) turbidity unit
NWQMS	National Water Quality Management Strategy
NZS	New Zealand Standard
O	
O	Oxygen delignification stage
O & M	Operating and maintenance
O ₂	Oxygen
O ₃	Ozone
OCP	Organochlorine pesticide
OCS	Office of Chemical Safety
OC _{sed}	Fraction of organic carbon in bottom sediment
OD	Oven (100 %) dry
OD MSCL	Outer diameter Mild Steel Cement Lined
OH&S	Occupational Health and Safety
OHBC	Open hatch bulk carriers
OMB	Overall material balance
OSPAR	Oslo and Paris Conventions on the pollution of the North Sea, also known as the Convention for the Protection of the Marine Environment of the North East Atlantic
P	
P	Peroxide stage in bleaching, phosphorus
P&Ids	Piping & instrument diagrams
Paa	Per acetic acid
PAHs	Polycyclic Aromatic Hydrocarbons
PBDD	Polybrominated dibenzodioxin
PBDF	Polybrominated dibenzofuran
PCB	Polychlorinated biphenyl
PCDD	Polychlorinated dibenzo-p-dioxin
PCDD/F	Poly-Chlorinated Dibenzo-p-Dioxin/ Polychlorinated Dibenzofuran
PCDF	Polychlorinated dibenzofuran
PE	Polyethylene
PEFC	Programme for the Endorsement of Forest Certification Schemes
PET	Polyethylene Terephthalate
PEVs	Protected Environmental Values
PFRP	Private Forest Reserves Program
pg	Picogram (one-trillionth of a gram)
pg/L	Picogram per litre
pH	Potential of Hydrogen – negative 10-base log (power) of the positive hydrogen ion concentration; measure of acidity
PHA	Preliminary Hazard Analysis
PHAST	Process Hazard Analysis Software Tool
PIC	Person in charge
PIMS	Process information management system
PLC	Programmable logic controller
PM10	particles with aerodynamic diameters of up to 10 µm
POL	Port of Launceston
POPs	Persistent organic pollutants
POSS	Project of State Significance
ppb	Parts per billion

Abbreviation	Definition
PPE	Personal Protective Equipment
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
PPV	Peak particle velocity
PSSA	Particularly sensitive sea areas
psu	Practical salinity unit
PVC	Polyvinyl chloride
PWS	National or Tasmanian Parks and Wildlife Service
Q	
Q	Chelating stage in bleaching; flow rate
QAP	Quality assurance plan
QA/QC	Quality Assurance/Quality Control
QCS	Quality control system
QoS	Quality of service
R	
RAC	Resource Assessment Commission
Ramsar Convention	The Convention on Wetlands of International Importance especially as Waterfowl Habitat
RAP	Resolved Area for Protection
RB	Recovery boiler
REC	Renewable energy credits
REDOX	Reduction oxidation
RFA	Regional Forest Agreement
RL	Relative level
RMP	Rounds per minute
RO	Reverse osmosis
ROW	Right of way
RPD	Relative percent difference
RPDC	Resource Planning and Development Commission (Tasmania)
RPM	Revolutions per minute
S	
s	Second; solid
S	Sulphur
SAC	Scientific Advisory Committee
SAN	Storage area network
SCADA	Supervisory control and data acquisition
SCAN	Scandinavian Pulp, Paper & Board Testing Committee, standard
SHE	Safety, environment and health
SHEQ	Safety, health, environment and quality
SHEQ-MS	Safety, health, environment and quality management system
SHTA	Stony Head Training Area
SIA	Social Impact Assessment
SLA	Statistical Local Area
SMP	Safety Management Plan
SO ₂	Sulphur dioxide
SO ₄	Sulphate
SPM	Suspended Particulate Matter
SPPA or SPP Act	Tasmanian <i>State Policies and Projects Act 1995</i>
SRC	Safety, rehabilitation and compensation
SRCC	Safety, Rehabilitation, and Compensation Commission of the Australian Government
SRS	Sulphate removal system
SS	Suspended solids; stainless steel

Abbreviation	Definition
SSE	South-south-east
SSP	Tasmanian <i>State Policies and Projects Act 1993</i>
SVI	Sludge volume index
SVP	Sewer vent pipe
SW	Softwood; south west
T	
t	Tonne (metric)
T/y	Tonnes per year
TA	Total alkali
TAPM	The Air Pollution Model
TAPPI	Technical Association of Pulp and Paper Industry (USA), standard, http://www.tappi.org
Tas	Tasmania
TASI	Tasmanian Aboriginal Site Index
TASVEG	The ongoing State Government program of mapping Tasmania's vegetation at high resolution, primarily at 1:25,000, across the whole State
TBT	Try butyl tin
TCDD	Tetrachloro-dibenzo-p-dioxin
TCDF	Tetrachlorodibenzofuran
TCF	Total chlorine-free
TCP/IP	Transmission control protocol/internet protocol
TDI	Tolerable daily intake
TDS	Total dissolved solids
TEA	Tensile energy absorption
TEF	Toxicity emission factor
TEMCO	Tasmanian Electro Metallurgical Company Pty Ltd
TEQ	Toxicity equivalents
TIGER	Tasmanian Information on Geoscience and Exploration Resources
TJ/d	Tera joule per day
TMI	Tolerable monthly intake
TNGP	Tasmanian Natural Gas Pipeline
Tpa	Tons per annum (TPA)
Tpd	Tons per day (TPD)
TPLUC	Tasmanian Public Land Use Commission
Tpy	Tons per year (TPY)
TRAC	Tamar Residents Action Committee
TRMPA	Tamar Regional Management Planning Authority
TRS	Total reduced sulphur
TSP	Total suspended particulates
TSPA	Tasmanian <i>Threatened Species and Protection Act 1995</i>
TSS	Total suspended solids
TV	Television
TVAS	Tamar Valley Air Shed
U	
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPI	Unique parcel identifier
US EPA	United States Environmental Protection Agency
V	
V	Volts
VOC	Volatile organic-compounds
VOIP	Voice over internet protocol

Abbreviation	Definition
VSD	Variable speed drive
W	
W	Watt
WAS	Waste activated sludge
WBL	Weak black liquor
WHO	World Health Organisation
WL	White liquor
WMA	Tasmanian <i>Water Management Act 1999</i>
WSP	Water supply pipeline
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant
Z	
ZID	Zone of Initial Dilution
Others	
%	Percent
% ISO	Brightness of pulp, ISO 2410
θ_{bs}	Bed sediment porosity
$\mu\text{g/L}$	Micro-grams per litre