Section 2 Background

The Statewide Landcover and Trees Study (SLATS) is a major vegetation monitoring initiative of the Queensland Department of Natural Resources and Water (NRW). SLATS gathers accurate woody vegetation cover and land cover change information for vegetation management planning and compliance, and for state government greenhouse gas inventory purposes.

Landsat Thematic Mapper (TM) and Enhanced Thematic Mapper Plus (ETM+) satellite imagery have been used to compare the vegetation cover from 1988–2006 (see Table 1), and to provide baseline land cover mapping over the entire State of Queensland as at 1991. Satellite images used in this report were captured during the periods from May–October 2005 and from May–October 2006.

SLATS mapping is used at the state, regional and local levels, and having a spatial resolution of 30 metres is typically used to produce maps at a scale of 1:100 000 or coarser. SLATS provides a consistent data set covering the entire State at a medium resolution. This mapping is not intended to be a substitute for high resolution studies of, for example: riparian vegetation or small patches of remnant bushland that would conventionally use high resolution satellite imagery or aerial photography. Landsat reliably maps areas of woody vegetation change of one hectare or greater. However the image resolution of 30 metres could limit its suitability for mapping narrow vegetation corridors.

This report gives statistics on woody vegetation clearing *rates*, expressed as thousands of hectares cleared per year. Quoting rates of clearing instead of actual areas of clearing allows for comparison of change over time. To give areas of actual clearing would be misleading because variations in the satellite overpass scene dates give periods which may be significantly longer or shorter than a year, therefore cannot be compared from one reporting period to the next. In practice, to capture suitable cloud-free Landsat satellite images for the entire state each year in the preferred season (winter), a range of satellite overpass dates are acquired, covering a period of up to five months (typically June to October). Since 1999, imagery has been acquired and analysed to derive yearly statistics. For the period 1988–1999, the time periods for reporting varied from two to four years (see Table 1), however the statistics are still calculated as yearly clearing rates for consistent comparison, as can be seen in Figure 1.

Please refer to Section 3.1 for a more comprehensive explanation of clearing rates and SLATS analysis periods.

Table 1: Imagery source and data resolution of SLATS reports.

Reporting Period	Satellite and sensor source	Resolution (pixel size)	
		Imagery used	Statistics calculations
1988–1991 (DNR&M, 2004)	Landsat–5 TM	30m (resampled to 25m)	100m
1991–1995 (DNR, 1999b)	"	"	1km
1995–1997 (DNR, 1999c)	"	"	"
1997–1999 (DNR, 2000)	Landsat–5 TM and Landsat–7 ETM+	"	"
1999–2001 (DNR&M, 2003a)	Landsat–7 ETM+	"	100m
2001–2003 (DNR&M, 2005)	Landsat–7 ETM+ and Landsat–5 TM	"	"
2003–2004 (DNR&M, 2006)	Landsat–5 TM	"	25m
2004–2005 (DNR&W, 2007)	Landsat–5 TM	"	25m
2005–2006 (DNR&W, 2008)	Landsat–5 TM	"	25m

Statistics for 2003–06 in this report have been produced using full resolution datasets (resampled to 25m resolution), thereby giving slightly higher accuracy. Statistics from 1988–2003 in this report are based on the generalised 100m resolution as provided in previous reports.

While this report contains figures on the change in clearing rates of remnant vegetation, this refers to change in *woody* remnant vegetation only. The Queensland Herbarium reports on all *(woody and non-woody)* changes to remnant status as part of its Regional Ecosystem (RE) mapping program (Accad *et al.,* 2006).

The following supplementary reports have also been produced:

- 1999–2000 clearing in the Murray-Darling (DNR&M, 2003b), Fitzroy (DNR&M, 2002), Burdekin (DNR&M, 2003c) catchments, and the Burnett/Mary National Action Plan (NAP) Region (DNR&M, 2003d) and the Western South-East National Action Plan (NAP) Region (DNR&M, 2003e).
- 2001–2003, 2003–2004, 2004–2005 and 2005–2006 clearing in each of the NHT Natural Resource Management Regions.

Detailed baseline land-cover mapping that discriminates areas of trees from pasture, crop, water, settlement and other areas has been completed for the entire State using 1991 imagery, referred to as the 1991 baseline land-cover mapping. This was the first medium resolution map of woody vegetation cover for the entire State of Queensland. However for more recent mapping of land use, it is recommend that mapping from the Queensland Land Use Mapping Project (QLUMP) be used (Witte *et al.,* 2006).

Land clearing in Queensland contributed to a significant proportion of Queensland's and Australia's total greenhouse gas emissions (Henry *et al.,* 2002; AGO, 2006). As a signatory to the 1992 United Nations Framework Convention on Climate Change (UNFCCC), Australia is required to produce an annual report of greenhouse gas emissions, including those contributed by clearing of forested land for uses such as agriculture or infrastructure. The Australian Greenhouse Office (AGO), established in 1997, is responsible for overseeing this reporting. In 1998, the National Carbon Accounting System (NCAS) was set up to improve the accuracy of Australia's estimates of greenhouse gas emissions and sinks associated with land use, land use change and forestry, including clearing of forests and woodlands for grazing and cropping (AGO, 2003).

While the Australian Government has recently ratified the Kyoto Protocol, which will introduce legally binding national emissions targets, the Australian Government has previously undertaken to meet its target under the protocol. The accounting rules have strict definitions for forest and for the areas to be counted as 'deforestation' (direct human-induced conversion of forests to other non-forest land use). Whereas SLATS reports all areas of land where loss of perennial woody vegetation can confidently be identified using Landsat imagery, the NCAS reports a subset of this total area that meets the definitional and reporting rules for national greenhouse inventory reporting (AGO, 2006; Macintosh, 2007).

The NCAS framework uses complex modelling to estimate greenhouse gas emissions and sinks for the areas included as 'Kyoto lands'. Queensland scientists continue to monitor international and national developments in greenhouse accounting and the implications for land management in Queensland (Burrows *et al*., 2002; Henry *et al*., 2005).

The SLATS Advisory Committee was established to provide feedback from a wide range of stakeholders and to assist with communication of results/data to industry and the wider community. The committee provides input to SLATS with regard to overall direction and methods, and assists in the dissemination of project results. Annual meetings are held prior to the release of statistics from SLATS reports, with additional meetings as required. The Committee consists of representatives of NRW, Department of Primary Industries and Fisheries (DPI&F), Environmental Protection Agency (EPA), Queensland Conservation Council, Brisbane Region Environment Council, Wildlife Preservation Society of Queensland, AgForward, Local Government Association, Australian Forest Growers and an Emeritus Professor from the University of Queensland's Department of Botany.