

Clearing at Enterprise Mine - 03 December 2015 to February 2016

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Aim:

To investigate evidence of clearing on the Eighteen Mile Swamp Escarpment since the announcement on 03 December 2015 of the North Stradbroke Island Protection and Sustainability and Other Acts (NSIPSOA) Amendment Bill 2015.

Methods:

This report utilises publicly available satellite imagery only.

(a) Google Earth hi-resolution satellite images in visible wavelengths:

The only two cloud-free images available for this date-range are 30 August 2015 and 12 January 2016. From these we can visually see what new areas were cleared within that broad date range.

As an aid for comparing images and particularly for referencing the Landsat pixellated overlays in the following images:

Cleared areas at 30 August 2015 are outlined in white.

Cleared areas at 12 January 2016 are outlined in red.

(b) Landsat 7 or Landsat 8 8-day NDVI analyses:

These images are lower resolution but more frequent. They are used to narrow down the dates on which particular areas were cleared.

Landsat 8 does not have the resolution of aerial photos. It records pixel sizes mostly at 30m with some at 15m. The OLI:(cartographic error) is 12 meters circular error. What this means in practice is that clearing of, say, a short narrow vehicle bush-track may not be apparent but anything larger will be. The borders of cleared areas will be naturally indistinct. However, by using the combination of Landsat and high-resolution satellite images the actual boundary can be more accurately mapped.

NDVI is a measure of vegetation health. As shown on the images below, bare ground and open water will appear white, stressed vegetation appears in shades of brown, while healthy growing vegetation appears in deepening shades of green.

Both Landsat 7 and 8 pass over a particular point on Earth every sixteen days. Due to the nature of their orbits and scanning, a complete daylight image of an area is only available as an 8-day average every 16-days (Landsat 8) or 32-days (Landsat 7). Heavy cloud-cover can affect NDVI so some images may be unusable.

Usable Landsat images were downloaded from Google Earth Engine and pasted as a geo-referenced layer in Google Earth. This allowed both the GoogleEarth image and traced outlines to be visible.

Results:

Satellite imagery reveals that between 06-30 September 2015 an area of approximately 4.2 Ha with a perimeter of 1.5 km was cleared outside the "Limits of Disturbance" area of the NSIPSOA Amendment Bill 2015. This area included Of Concern vegetation and was subsequently dry-mined.

Between 29 December 2015 and 02 February 2016, since the introduction of the NSIPSOA Amendment Bill 2015, an area of approximately 2.25 ha with a perimeter of approximately 680 metres was cleared on the face of the Eighteen Mile Swamp Escarpment adjacent to the Sibelco Enterprise Mine. This area

- lies outside the boundaries of the "Limits of Disturbance" outlined in the current Bill.
- extends outside the boundaries of the "Katter" 2015 Bill.
- extends right to the boundary of the "Newman" 2013 Amendment Act.
- extends to within 55m of the internationally protected Ramsar zone
- cleared 'Of Concern' E. planchoniana, Brush Box and Banksia woodland (RE 12.2.10)
- extends to within 130 metres of Corymbia open forest (Of Concern RE 12.2.5) and 200m of notophyll vine forest (Of Concern RE 12.2.5) that is found along the escarpment.

As dry-mining appears to have ceased at Enterprise some time in January, this area has not been mined.

As of this report date (06 March 2016) it is unknown whether there has been further clearing in this area since 10 February 2016.

Enterprise Mine, North Stradbroke Island.



Google Earth satellite image of 12 January 2016

Magenta outline = "Limit of Disturbance" traced from NSI 3 map of NSIPSOA Amendment Bill 2015.

White rectangle is area of interest detailed in images below

Summary of Clearing September 2015 - February 2016



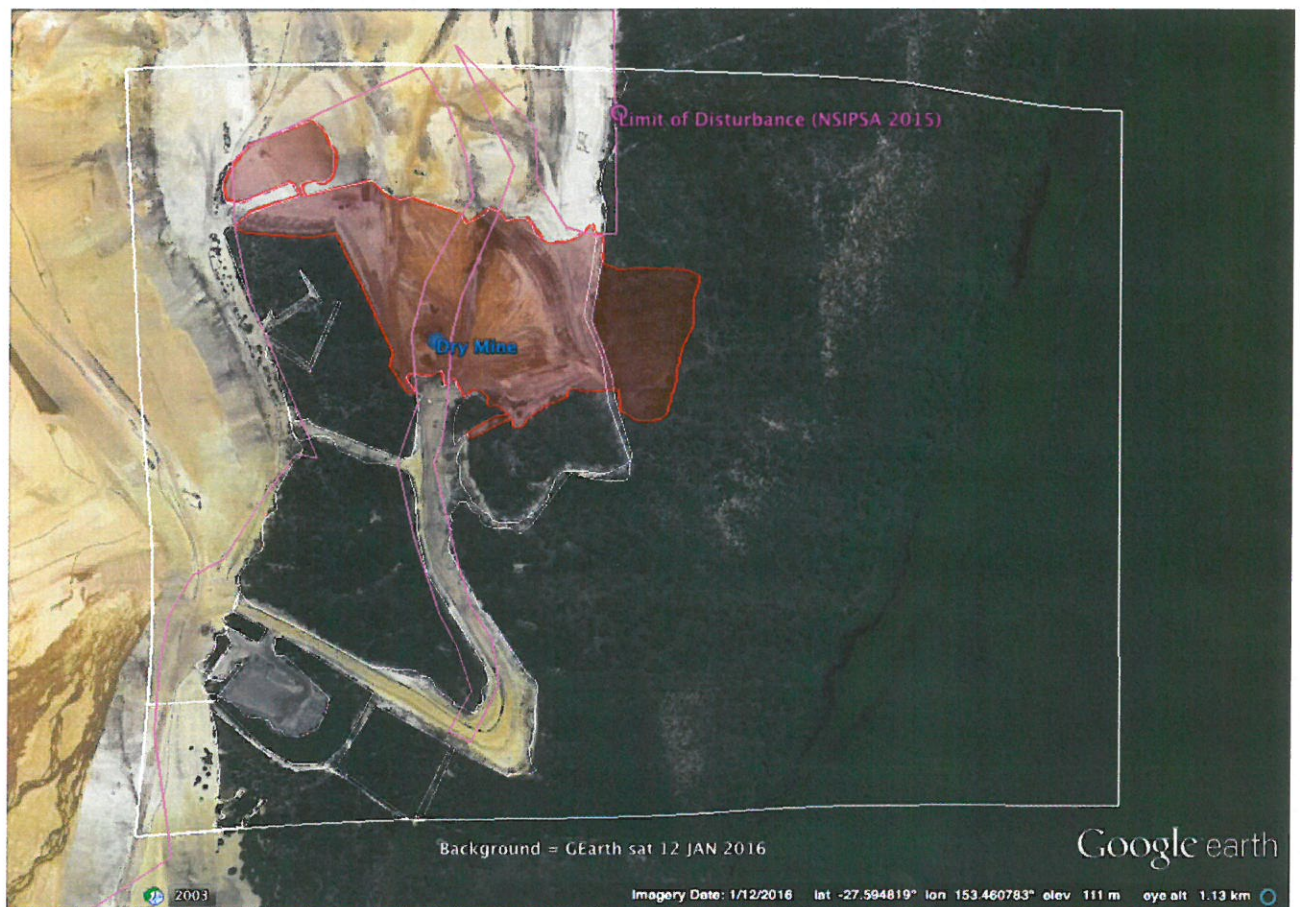
The two areas highlighted in yellow have been cleared since the introduction of the NSIPSOA Amendment Bill 2015

30 August 2015



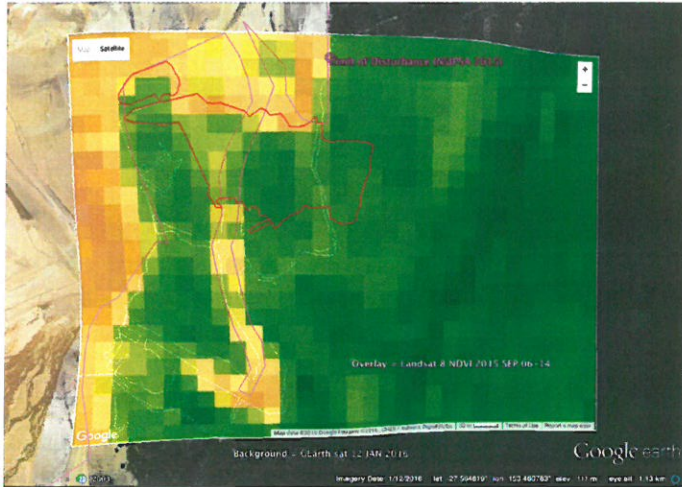
Google Earth. Cleared areas are hand-outlined in white. White rectangle = area of Landsat overlays

12 January 2016



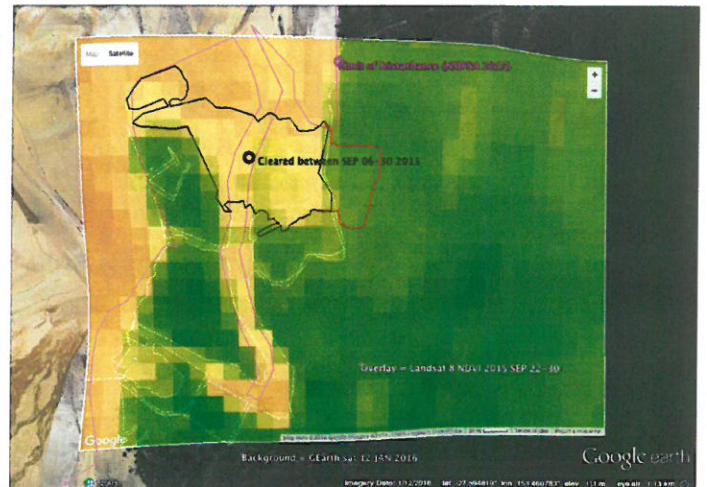
Google Earth. Red shaded outline = area cleared between 30 August 2015 and 12 January 2016

September 06-14 2015



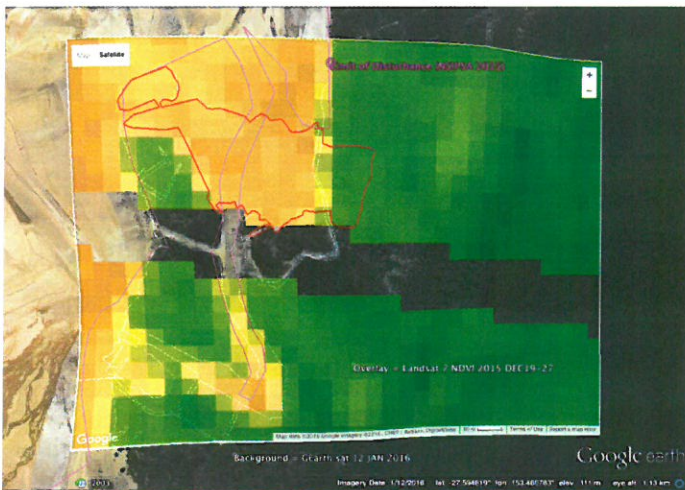
Landsat 8 8-day Sep 06-14 2015 NDVI

September 22-30 2015



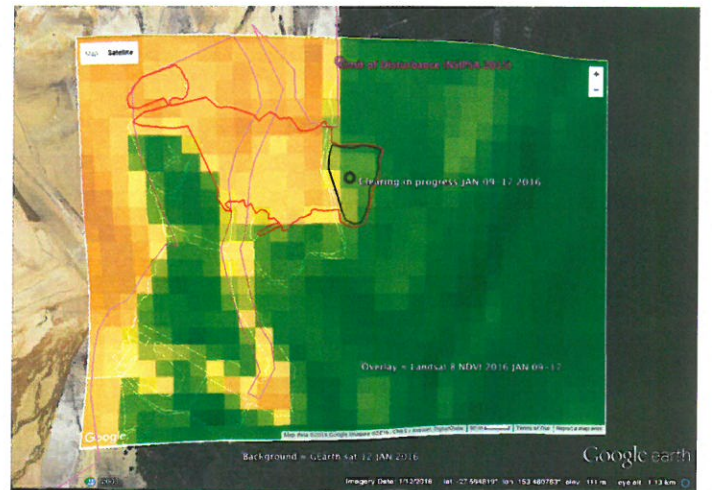
Landsat 8 8-day Sep 22-30 2015 NDVI
Black outline = area cleared since previous image.

December 19-27 2015



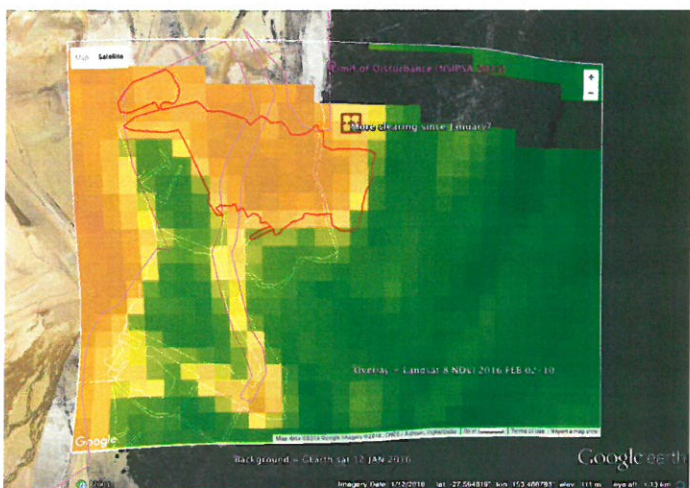
Landsat 7 8-day December 19-27 2015 NDVI

January 09-17 2016



Landsat 8 8-day January 09-17 2016 NDVI
Black outline shows area being cleared.

February 02-10 2016



Landsat 8 8-day February 02-10 2016 NDVI
Maroon marker shows continued clearing since January 17 2016.

February 10-18 2016



Landsat 8 8-day February 10-18 2016 NDVI
Black outline shows area cleared since January 17.

As of this report date (06 March 2016) the Landsat February 10-18 is the most recent satellite image available.
It is unknown whether there has been further clearing in this area since 10 February 2016.