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COTTON AUSTRALIA

Advancing Australian Cotton

Verbal Submission
Independent Planning Commission
Vickery Extension Project Hearing

INTRODUCTION

Cotton Australia is the key representative body for Australia's cotton growing industry, supporting about 1,200 cotton farming families in 152 regional communities in NSW, Queensland and now into Victoria.

Cotton Australia does not typically get involved in locally based issues as we take a position that we only represent the broad concerns of growers. However we believe that the Vickery Extension Project (The Project) has much broader implications for our growers due to the proximity of the development to prime agricultural lands and high quality water resources. Particularly that key elements of The Project represent significant development creep.

While Cotton Australia will take the opportunity to provide a written submission that expands on these concerns it is the potential impact of dust on a cotton crop that I want to speak about today.

Coal dust context

The farm land adjacent to the Naomi River and through which the rail spur could traverse is used to grow crops, cotton included and is not just used for grazing. This is not unlike the rest of the Naomi Valley, which as ABS employment figures indicate the Agricultural Workforce for "sheep, beef cattle and grain farming" can be as much as just over two thousand employees[1], compared to cotton sugar and other crop growing employees which is in the three hundreds.[2]

While The Project's EIS has considered dust impacts and also potential impacts of coal dust for grazing cattle[3], it has not considered such for cropping. This is an unfortunate omission.

Successive Cotton Research and Development Corporation (the CRDC) grower surveys confirm that an agribusiness growing cotton will have the majority of its available land area dedicated to cropping but due to crop rotation strategies cotton is not the only crop that is grown. Indeed cropping is not the only activity on farm. The 2016-17 survey results for instance indicate on average 75% of total farm area was available for cropping with the remaining 25% used for grazing or native vegetation[4], and that only 21% of total farm area was under cotton production[5].

Hence by describing the potential physical and financial impacts coal dust could have on a cotton crop, I am suggesting these could be used as a surrogate of what could also be happening with other crops.

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[1] Cited in Ruth Nettle "People in Cotton" 2016 'grazing' employees in 2011 was 2,240 and 2006 was 2,498.
[2] Ibid 'cotton/crops' in 2011 was 310 and 2006 was 382.
[3] The 2012 study by W. D. Whittier of 'Cows as a Biological Monitors of Surface Coal Mining Contamination of Biological Systems by Micro and Macro Element Toxins' that found no toxins had 'accumulated in these cows represents strong support for a lack of contamination of the environment with these elements'.
[4] CRDC 2017 Grower Survey, Cotton Crop Details – Area of Farm, p13. It is available at: https://www.crdc.com.au/publications/growersurvey.
[5] CRDC 2017 Grower Survey, key findings, p8.
Cotton Crop Details – Area of Farm, p13 - For the Northern Region of NSW (which included Lower - Upper Naomi, Gwydir and Bourke areas) the average farm size was 6,505 ha.
P41 It also found across all growing areas the average farm size was 8,020 ha a; number of employees during 2016-17 employees per farm 5 full time, 1 part time 3 casual and also 2 contractors).

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In order to provide examples of the potential scale and nature of these impacts, it is necessary to firstly provide some understanding of growing, classing and processing the cotton crop's lint. This is the fluffy white fibres emerging from the open seed pod or boll, which are on show at harvest.

Cotton lint is used to make textiles and garments, so cotton lint is classed and priced according to its physical attributes. In 2016-17 cotton lint generated by NSW had an export value of $593 million.

When you consider that the northern region of NSW, which includes the Namoi Valley, in that same year generated 10.9 bales/ha of fully irrigated crop; while the industry average for fully irrigated was 9.88 bales/ha [6], you can begin to understand why Cotton Australia is concerned about coal dust.[7]

All the more so in light of how the plant grows.

How cotton grows

Cotton is grown as an annual summer crop, the growing season from planting to picking lasts approximately six months.[8]

Crop nutrition determines crop yield and being a newly planted crop each year means that the grower needs to resupply some of the nutrients the plants will need to grow.[9]

Each cotton fibre is a single seed hair inside the boll from which they are harvested. It takes 4-5 months of growing before the bolls open. Opening exposes the fibres to the elements and dries them out[10].

"Fibre quality [at picking] is a combination of two components. The first is the genetic attributes of the variety and the second is the environment in which the fibre develop."[11]

For instance "[c]olour of the fibre in the field is affected by field weathering (rainfall), early termination of bolls caused by frost, insect damage to bolls, deterioration of fibre caused by fungi, and contamination with the fibre."[12]

Similarly fruiting position of the boll will determine the boll size so too which branch of the plant it is on[13], even the presence of persistent shading has an impact on fibre thickness.[14]

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[6] Cotton Research & Development Corp (CRDC) Grower Survey 2017 available at: https://www.crdc.com.au/publications/growersurvey.
In 2016-17 the northern region of NSW represented 40% of the national cotton crop area planted, generating 10.9 bales/ha of fully irrigated crop. The industry average for fully irrigated was 9.88 bales/ha and partially irrigated 2.98 bales/ha and rain grown 0.95 bales/ha.

[7] This is Season dependant. In 2015-16 industry averages fully 12.4bales/ha, partial 6.4, rain 3.6; Nthn NSW averages irrigated 12.8bales/ha, 8 partially, 2.7 rain.

[8] https://cottonaustralia.com.au/cotton-library/fact-sheets/cotton-growing-cycle

[9] Nitrogen (helps leaf growth), phosphorous (forms roots, flowers and cotton lint) plus potassium (helps make strong stems and keep a steady plant growth rate).

[10] The Cotton Fibre in CSIRO Review of the Dyeing Ability in Austn Cotton June 2014, Crowle, Gordon and Yang.

[11] Farming Fibre Quality Smart Decisions, 2004, Proc 12th ACCConf 10-12th Aug Gold Coast 2004, Australian Cotton Growers Research Assoc; Roberts G, Constable G , Bange M, Felton-Taylor, pp 175-182.

[12] Bange M & Constable G, 2004(?) CSIRO, Crop Physiology Producing A Better Fibre

[13] Kerby Fiber Quality listed a number of research papers form the US 1987-1991 -- CRDC ref: img-305114241]

[14] CRC80 Final Report Crop Management – CSIRO 2004 Bange and Caton; A Project To Develop Management Strategies For In The Field That Optimised Cotton Fibre Properties.

All these attributes affect the quality of the finished product: what colours it can be dyed and how easy it is for the mill to create the desired textile product.

For example a single foreign fibre "can lead to the downgrading of yarn, fabric or garments or even the total rejection of an entire batch....[it is because this] represents a significant cost to spinning mills [it] has led [the mills] to implement a range of methods to cope[15]."

Implications for how cotton is classed and processed

Consequently, the 'particles that cannot be removed [at harvest] detract from the quality'[16] and hence the price the lint is sold for is decreased. These contaminates could be leaf or seed pod fragments, dirt or dust, even plant sugar residues (these can make the fibres sticky).

The price of cotton lint is determined by classing the lint into different grades that represent its fibre quality which in determines its potential use.

Australia uses the US Department of Agriculture developed classing system and includes whiteness (colour grade, reflectance and yellowness), fibre length, uniformity of length, strength, fineness (Micronaire reading) plus content of leaves, sticks etc.

And it is in this respect Cotton Australia is concerned: the increased likelihood of coal dust travelling off site from the expanded project onto areas being cropped, and over the months cotton plants are growing.

In fact the quality of the fibre and keeping the processed fibres as free from contamination is so much of an imperative for the industry that the Cotton Research and Development Corporation (the CRDC) has done and continues to invest into research and extension regarding these issues.

Doing so helps growers to operate sustainable and profitable businesses. Doing also protects the reputation Australian cotton has achieved as being high yielding, clean raw cotton. It is a status repeatedly observed by the International Textile Manufacturers Federation in their Cotton Contamination Surveys. These are annual global surveys, across the 40 cotton producing countries[17].

To provide some insight into how might this can affect a growers' bottom line I refer to the CRDC's annual grower survey which regularly records the size and type of quality discounts cotton growers incur each year.

In 2016-17, 85% of 214 respondents reported at least one quality discount was incurred, also that the three discounts to have impacted the largest number of bales were leaf, colour and high micronaire (fineness). That season was described as 'challenging' – high insect pest pressure, extreme temperatures and lack of summer rainfall.[18]

P25 "The third experiment did confirm shading (stimulating cloudy conditions) persisting during the whole boll period will reduce micronaire ....Micronaire on average across all sowings was reduced by 0.29. Similarly yield was reduced by shading across all sowings by an average of 831 kg/ha".

[15] CRDC reference: van der Sluijs 2008 Studies on Contamination in Australian Cotton 40501 p2.

[16] Bange & Constable, 2004(?).

[17] See International Textile Manufacturers Federation Cotton Contamination surveys (2014 Feb , "Summary of Survey Result 2013"; Jan 2012 PR "2011 results" p144; Dec 2016 PR "2016 results" p235.
https://www.itmf.org/publications/free-downloads/cotton-contamination-surveys.

[18] 2016-17 made use of winter rainfall to grow >500,00 ha of cotton producing 4.2m bales.
https://www.crdc.com.au/publications/growersurvey

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More details are provided in the survey for 2015-16 which is similarly described as being a season of limited water with a long, hot, dry finish. For 2015-16 quality discounts received ranged from 18c to $130 per bale. Respondents for irrigated cotton farms averaged a discount of $25.10 per bale, (range $0.18 to $130), partially irrigated averaged $14.90 per bale, and rain grown averaged $31.60.[19]

We also know from the grower surveys that colour continues to be nominated as the discount that is the most costly each season.[20]

Added to that, we know[21] from the 'People in Cotton' research that delved into ABS employment statics the cotton industry like other agricultural commodities generates a workforce of support service employees. For instance apart from the just over two thousand sheep, beef cattle and grain farming employees[22], and the three hundred[23] cotton sugar and other crop growing employees, employed in a good year, these industries are supported by another approx 300 support service employees.

What we don't know is scale and significance of coal dust on a cotton crop.

CONCLUSION

If The Project was to go ahead there is not just the risk of coal dust from mining activities being dispersed into the wider environment, which may arise. Additional activities on-site have been proposed and all are potential sources of coal dust.

Namely relocating Whitehaven's existing coal handling and preparation plant (CHPP) from Gunnedah to The Project's location. In doing so processing of coal from Tarrawonga and Rocglen mines will occur as well as that from Vickery. On top of that there are the potential dust activities from the train and its load out facility.

So approval of the extension would result in coal from three mines being processed in this part of the valley, as well its shipment offsite to the Port of Newcastle.

In explaining how the cotton crop grows, is classed and processed as well and the influence the environment has on the end product, I've attempted to outline the potential risks to the cotton lint and also the financial impact to a grower's bottom line. But I ask The Commission, what of the unintended consequences for other crops being grown, let alone the community and general amenity?

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[19] Respondents for irrigated cotton farms averaged a discount of $25.10 per bale, (range $0.18 to $130), partially irrigated averaged $14.90 per bale, (range $2 to $40) and rain grown averaged $31.60, (range $0.50 to $110). To break that down further and bring it back to the Namoi Valley, respondents in 2015-16 survey from the northern region of NSW, incurred a discount of an average $13.80/bale irrigated, $16.44/bale partially, $42.30/bale rain grown.

[20] See p5: http://www.insidecotton.com/xmlui/bitstream/handle/1/4429/2016%20Cotton%20Practices%20Survey%20REPORT.pdf?sequence=4&isAllowed=y

[21] For a further breakdown see Boyce and CRDC Comparative Analysis annual study series. For example the average operating profit per bale was calculated to be $175.23 in 2016-17 and $159.66/bale in 2015-16. Total average yield (bales) in 2016-17 was 12,773.17 and 2015-16 11,368.18. See p41: http://www.insidecotton.com/xmlui/bitstream/handle/1/4597/2017%20Australian%20Cotton%20Comparative%20Analysis%20Report.pdf?sequence=1&isAllowed=y

[22] Cited in Ruth Nettle "People in Cotton" 2016, grazing in 2011 was 2240, 2006 was it 2498.

[23] Ibid cotton/crops in 2011 310, in 2006 it was 382.

To reiterate Cotton Australia's long held policy principles:

- Protection of land and water resources for food and fibre production from negative impacts is paramount.
- Only when it is definitely proven that a development will have no impact on the productive capacity of the land should the government consider permitting the project.

Thank you

Jennifer Brown
Policy Officer
Cotton Australia

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