



CICL Round 1 Private Irrigation Infrastructure Operators' Program

Final Report

10th May 2017



Project Overview

CICL submitted its Private Irrigation Infrastructure Operators' Program (PIIOP) Round 1 funding bid to the then Department of Sustainability, Environment, Water, Population and Communities (SEWPAC, later redesignated the Department of Environment and hereafter referred to as "the Department") on 27th November 2009.

CICL's original bid sought \$51,218,330 of funding in return for the transfer of 15,688ML of water entitlement to the Commonwealth. On 9 April 2010, CICL was advised by the responsible Minister, Senator Penny Wong, that its funding bid was successful. CICL subsequently reduced the scope of its proposal to \$43,764,727 (GST exclusive) in return for 12,545ML.¹ The Deed of Agreement between the CICL and Commonwealth was signed on 7th January 2011.

The purpose of this report is to satisfy CICL's final PIIOP Round 1 reporting obligation to the Commonwealth and to record, for its own purposes, the essence of what was a demanding but highly successful modernisation project.

Project Summary

CICL's Rd 1 PIIOP consisted of the following sub-projects (SP):

- SP1 – the clay re-lining of 13 sections, over a combined distance of 10 km, along CICL's Main Canal to reduce an area of known seepage
- SP2 – 80 on-farm projects in the Coleambally Irrigation Area (CIA) to reduce water losses and to generate labour savings
- SP3 – the automation of Kerarbury Channel Proprietary Limited's (KCPL, a neighbouring irrigation company) water delivery system by CICL through the installation of Total Channel Control (TCC) metering and telemetry and its connection to CICL's TCC master control system/'back-end'
- SP4 – the automation of CICL's West Coleambally Channel (WCC) to provide improved regulation of flows and automated metering, water ordering and water accounting within the WCC
- SP5 – 13 on-farm projects in the WCC to reduce on-farm water losses and to generate labour savings

Major Outcomes

The major outcomes of CICL's Rd 1 PIIOP were:

- clay re-lining of 10km of CICL's Main Canal and rubber lining of 2.5 km of a secondary canal

¹ The reduction in scope of the project was a consequence of a decision by CICL not to proceed with a pipeline project in the WCC and changed levels of proponent support in the period between the date of submission of the original bid and the Department's acceptance of the bid.

- reduced water losses and labour savings on-farm for 66 of CICL's Members, including 13 in the WCC
- the installation of Total Channel Control throughout KCPL's delivery system, providing its Members with access to higher flow rates; accurate metering and automated water ordering and water accounting
- the installation of Total Channel Control along the WCC, providing CICL's Members on that supply route with continuous access to real time metering, automated water ordering and automated water accounting
- a reduction of CICL's water losses to previously unachievable levels – refer to Appendix 1

The following photographs are illustrative of the PIOP Round 1 system works undertaken by CICL on its and KCPL's irrigation delivery systems (SPs 1, 3 & 4).

Channel Re-lining (SP1)



New TCC Regulating Structure on Kerarbury Channel (SP3)



TCC Farm Outlet on Kerarbury Channel (SP3)



TCC Regulator on WCC (SP4)



TCC Regulator on WCC (SP4)



Project Variations

Throughout the scope of CICL's Rd 1 PIIOP, the following variations were approved:

- Variation 1: Approval on 17th March 2011 to, in effect, amend the original milestones due to delays in finalisation of the Deed of Agreement
- Variation 2: Approval on 3rd February 2012 to, in effect, accommodate administrative changes sought by the Department
- Variation 3: Approval on 9th December 2014 to vary milestone dates which, in effect, extended the program by 12 months to allow for delays to three major on-farm projects and the finalisation of clay re-lining work that had been delayed by weather

In addition to the above variations, the Department agreed to allow CICL to direct an under-spend of \$969,974 (from project administration and contingency) towards re-lining an additional 2.5 km of channel utilising EPDM (a synthetic rubber).²

In the final analysis, the Commonwealth provided \$44,063,253 GST exempt (comprised of \$43,764,727 plus \$298,526 of accrued interest) in exchange for the transfer of the following water quantities of water entitlement from CICL to the Commonwealth:

- General Security 7,579 ML
- Conveyance 4,577 ML
- High Security 389 ML

Planning Considerations & Risk Management

CICL's PIIOP was planned and executed 'in-house'. Prior to entering into the PIIOP agreement, CICL's CEO identified the following risks associated with CICL's Round 1 PIIOP to the Co-operative's Board:

- Legal Issues:
 - The PIIOP funding agreement was heavily weighted in term of risk in favour of the Commonwealth.
 - There was a lack of clarity regarding some matters in the funding agreement and CICL's attempts to clarify them had met with limited success.³
 - CICL would be required to accept responsibility for the on-farm works even though it was not managing the delivery of the related works.
- Financial Issues: The management of cash flow in respect of SPs 2 and 5 would be challenging because some proponents were likely get ahead of their agreed milestones

² CICL opted to use this material in lieu of clay because it did not have the lead time to source, prepare and position clay by the time it was apparent that there might be an underspend on SP1 and because the likely sources of clay were too far from the work sites to justify the expense of clay lining.

³ These included the tax impacts associated with PIIOP, both for CICL and its Members; the exact nature of CICL's responsibilities with respect to the management of Work, Health & Safety; and the Commonwealth's claims to intellectual property.

while others were likely to fall behind of theirs - this might see CACL in a situation where it was under pressure for funding by those proponents who wanted to proceed with the next phase of their projects while CACL's next funding milestone was in danger of being missed because other proponents were behind schedule.

- Technical Issues:
 - The clay re-lining envisaged was on a scale not previously attempted by CACL and beyond the capabilities of local contractors.
 - The clay re-lining could only occur during winter shutdowns and would therefore be prone to the vagaries of weather.
- Organisational Issues: In light of lessons-learned during the delivery of CACL's WaterSmart Australia project, CACL needed to manage its PIIOP project in-house and to appoint a Project Co-ordinator reporting directly to the CEO.⁴
- Political Issues: CACL needed to manage the distinct possibility that the politics associated with the Basin Plan might escalate local anxieties/tensions to the extent that Members would refuse to participate in a program designed to recover water for the environment, or might cause a rift between those Members who opted to participate and those that did not.

In order to manage these risks, CACL adopted the following measures:

- Legal Arrangements:
 - The PIIOP funding agreement was subjected to extensive legal, financial and tax review⁵. In the final analysis however, there were a limited number of contractual matters that were not fully resolved and CACL had to assume some related risks.⁶
 - CACL undertook its own legal conveyancing.⁷
 - Subsequent to the Department's acceptance of 800 ML of G Class/Stock & Tank Fill entitlement to fund on-farm works in the WCC area, it became apparent to it that the special approval required by the NSW Water Minister or his/her delegate to allow the transfer of such entitlement might not be assured. In order to avoid such a complication and delay, and to ensure that the WCC bids remained part of CACL's program, CACL requested the Department accept a like volume of conveyance

⁴ Elements of CACL's WSA project lagged because of a lack of clearly-defined staff responsibilities.

⁵ The legal, financial and tax opinions were provided by Ms Jenni Mattila (Mattila Lawyers), Mr Hugh McKenzie McHarg (Johnsons MME) and Mr Gary Essex (Johnsons MME) respectively.

⁶ Many of the successful PIIOP Round 1 tenderers delayed formally entering into their funding agreement with the Commonwealth for a longer period than CACL – in the end, CACL took the view that the Commonwealth was unlikely to amend its position and that the risks associated with further delay (e.g. loss of Member support, loss of funding opportunity etc) were greater than those of proceeding, albeit in the face of some uncertainty.

⁷ This was normal business practise for CACL and CACL did not want to be at arm's length to the related conveyancing transactions. However, the lawyers acting on behalf of the Department were initially most reluctant to deal with CACL's Company Secretary and took some time to accept her as a counterpart, despite the fact that she had been routinely acting on CACL's behalf in conveyancing matters for nearly 20 years.

entitlement in lieu. CICL's request was agreed and WCC Members transferred the corresponding amount of G Class entitlement to CICL.⁸

- Financial Arrangements:
 - PIIOP finances were separated entirely from CICL's normal financial arrangements.
 - Milestone payments were negotiated with the Department in a way that allowed for the iterative transfer of funds and water in advance of works occurring, but with subsequent transfers being dependent on an agreed tranche of work first being completed and acquitted.
 - CICL funded proponents ahead of receiving its related milestone payment from the Commonwealth where proponents were ahead of their agreed schedule of works in order to encourage delivery 'momentum' and to ensure that the associated land could be returned to production as soon as possible.⁹
 - A copy of CICL's final, audited, PIIOP Round 1 accounts is included – refer to Appendix 2.
- Technical Issues: SP1 represented the biggest technical challenge for CICL. SKM assisted CICL to develop its call for tender document; to assess tenders; to review work plans and to validate requests by contractors for variations to the PIIOP work directed to them. Detail on the approach taken and major lessons learned during the delivery of SP1 are covered in Appendix 3.
- Organisational Arrangements: The key arrangements that prevailed were:
 - A project coordinator and sub-project managers were appointed, with each being provided a directive from the CEO outlining their responsibilities, budget and reporting milestones. The related appointees were:
 - Project Coordinator Arun Tiwari¹⁰
 - Manager SP1 Kevin Kelly
 - Manager SP2 & SP5 Mike Ridley
 - Manager SP3 & 4 Austin Evans
 - Specific limits of authority for liaison with the Department were established.
 - Provision of monthly progress and financial reports to the Board.
- Management of Basin Plan Politics: CICL went to considerable lengths to explain to Members that irrespective of their sentiments, there would be a Basin Plan and CICL's challenge was to shape that Plan. Further, that PIIOP provided an opportunity to surrender water on favourable terms and in a way that enhanced the sustainability of CICL and Members' farming operations. These messages were communicated by way of Member

⁸ CICL had identified the special requirements associated with the transfer of G Class entitlement in its initial negotiations with the Department.

⁹ CICL did this by drawing on the administration fee it received for management of PIIOP and on underspends in other PIIOP areas when required and then subsequently reimbursing itself and/or the other sub-project budgets when its milestone payments were received.

¹⁰ Mr Tiwari assumed employment with another organisation midway through the program and his responsibilities were then assumed by Mr Mike Ridley.

meetings and written communication and ultimately Members voted on the business case for participation in PIIOP.¹¹

While SP1 was the most technically complex sub-project, SPs 2 and 5 required the most intensive management. SP1 was on a scale not previously attempted by CICL; beyond the scope of local contractors; could only undertaken during winter shutdown periods; and was subject to the vagaries of weather. SPs 2 and 4 on the other hand, saw CICL enter into a total of 53 contracts with proponents for works across 80 farms and then a separate delivery contract with the Commonwealth – CICL thereby assumed responsibility for delivery of all of the on-farm projects and the risks associated with non-delivery.

Lessons Learned/Re-learned

The organisational arrangements adopted by CICL drew on lessons learned during the roll-out of its WaterSmart Australia project. While the allocation of the PIIOP management roles placed an additional burden on CICL's managers, it provided an opportunity for their subordinates to 'step up' and assume additional responsibility for normal departmental activity.

The key lessons learned/re-learned during the planning and delivery of PIIOP Round 1 were:

- **Planning:**
 - CICL has considerable in-house expertise but in order to harness that capability, staff need to be extricated from their normal functions and allowed to focus their talents on project scoping, design and execution.
 - In the absence of unlimited time and considerable contingency funding, CICL's interests are best-served by drawing on technical advisors that it already has confidence in (in the case of PIIOP Round 1, SKM).
 - Any major clay lining/re-lining task should be preceded by a minimum of 12 months planning and preparation time.
 - Quite apart from the Commonwealth's insistence that construction tasks that it funds be delivered by operators holding Federal safety accreditation¹², there is benefit in having safety managed at the same level on major/complex projects that CICL is funding in its own right.¹³
- **Communication:**
 - CICL's Round 1 required a significant commitment to communication by CICL with proponents, contractors and the Department. CICL was announced as a successful PIIOP applicant on 9th January 2010 but it took until 7th January 2011 to finalise its funding agreement with the Department - in the intervening period, CICL's communication challenge was to manage the expectations of proponents, and to a

¹¹ Under its Rules, CICL cannot dispose of conveyance entitlement without the formal approval, by vote, of its Members.

¹² CICL came to understand the term "construction" has a very wide application under the Commonwealth's requirements and includes works such as clay lining.

¹³ CICL was quick to appreciate that clay lining on such a scale required a full-time on-site safety manager.

lesser extent contractors, who were quite understandably intent on commencing work as soon as possible.¹⁴

- Once CICL's PIIOP was underway, CICL relied on its sub-project managers to maintain daily liaison with contractors and a series of scheduled meetings also attended by the PIIOP Project Coordinator, CFO and CEO.
- Communication with on-farm proponents was managed on a case-by-case basis by the Manager SPs2 and 5, assisted primarily by one of his team members (Therese Chauncey). However at various times, up to four of the Manager's staff were involved in the delivery of SPs and 5. Considerable emphasis was placed on regular contact with the proponents, the maintenance of proper records of conversation with proponents and periodic site visits.
- CICL imposed limits on staff communication with the Department to avoid the prospect of mixed messages/confusion and in an effort to build the Department's confidence in CICL – the Project Manager was authorised to discuss general progress and general challenges; the Company Secretary, issues pertaining to the transfer of water; and the CFO, financial matters. All matters pertaining to the funding agreement/contract; project milestones and variations were communicated by the CEO. Notwithstanding these arrangements, communication was complicated for the first 12 months of the program because of high levels of turnover of personnel within the Department and in the case of the transfer of water entitlement, the turnover of legal advisors acting on its behalf. Once the Department was able to resolve its staffing issues, communication between it and CICL was greatly enhanced and became reflective of a joint venture where both two partners were working to a common goal.
- Implicit in the relationship between CICL and the Department was a mutual obligation to the principle of 'no surprises'.

- **Flexibility:**

- Notwithstanding contractual requirements, any program of the scope and duration of, and involving as many parties as, CICL's Round 1 PIIOP has to be underpinned by a degree of flexibility.
- CICL's decision to advance funding to proponents who were ahead of schedule was key to encouraging the timely roll-out of on-farm works, but required a very high level of attention to CICL's cash-flow.
- The Department's willingness to accommodate properly presented and properly justified requests for variations to project milestones was also key to the successful management and subsequent outcomes of CICL's Round 1 PIIOP.

¹⁴ CICL had to impress on the Department that what represented a short period of delay in Canberra could easily mean the difference between being able to lock-in a preferred contractor and having to accept someone else. At a farm level, proponents also ran the risk of missing out on contractors because of delays in Canberra. Moreover, if a contractor 'window' was missed there was the distinct probability that the related paddocks would not be returned to production because a key timeline in a cropping cycle would not be able to be met.

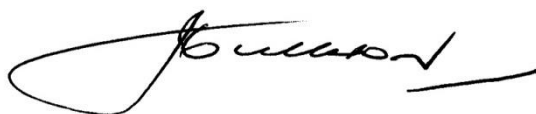
Conclusion

CICL's Round 1 PIIOP was the largest capital project ever undertaken by CICL - that CICL was able to deliver the project within budget, and without a single day's lost time through injury over a construction period that spanned three years, was testimony to the work of its staff and PIIOP contractors.

CICL wishes to acknowledge the particular contributions made by the following individuals:

- Technical Advice: Mr Stephen Harding and Mr Nick Kelleher of SKM for their technical overview of SP1
- Legal Advice: Ms Jenny Mattila, Mattila Lawyers
- Tax Advice: Mr Gary Essex, Johnsons MME
- Audit Services: Mr Hugh McKenzie McHarg (Johnsons MME)
- Contractors: Mr Damian Smith & Mr Rowan Ferrier, Northern Construction Group (clay re-lining); and Mr Henry Bosman, Irribiz and Mr John Rouke, Lining Solutions (rubber re-lining)
- Safety Services: Mr Greg Stevens, Transfield Services

CICL also wishes to acknowledge the many people that worked within the Department to facilitate CICL's Round 1 PIIOP – their efforts and personal commitment were fundamental to the success of CICL's Round 1 PIIOP.



John Culleton
Chief Executive

10 May 2017

Appendices:

1. CICL's Water/Conveyance Losses since privatisation
2. Audited PIIOP Accounts
3. SP1 Lessons
4. Examples of PIIOP Round 1 On-Farm works (SP2 & SP5)

Appendix 1 to

CICL Round 1 PIIOP Final Report

Dated 30 January 2017

CICL's Water/Conveyance Losses since Privatisation (in MLs)

• 99/00	75,800
• 00/01	85,806
• 01/02	99,690
• 02/03	110,312
• 03/04	90,123
• 04/05	108,026
• 05/06	39,784
• 06/07	35,704
• 07/08	30,627
• 08/09	32,046
• 09/10	39,839
• 10/11	32,316
• 11/12	33,081
• 12/13	28,813
• 13/14	25,056
• 14/15	26,975
• 15/16	27,084

CICL draws particular attention to the very significant decrease in its water losses commencing 2005-06 and the tightening of the losses 'band' commencing in 2012-13. The significant decrease in water

losses in 2005 was a consequence of CACL's adoption of TCC. The further 'step' decrease, in 2012-13, was a consequence of work undertaken in CACL's PIIOP1 program, especially SPs 1 and 4.¹⁵

¹⁵ It should be noted that in 16/17, CACL extended its delivery season by one month and operated a newly-built storage for a full season for the first time. Not all of the additional savings that have been realized since CACL's on-system works were undertaken can be attributed to solely to the PIIOP 1 work – additional upgrades undertaken since PIIOP 2 and 3 will also have had an impact. CACL considers the sum total of the PIIOP 1-3 works will see it set a new benchmark for conveyance/operating losses in 16/17.

Appendix 2 to

CICL Round 1 PIOP Final Report

Dated 12 July 2016

MILESTONE EXPENDITURE REPORT (AUDITED)

Summary table - comparison of budget vs spend

	Commonwealth Funds - Total Project Budget	Commonwealth Funds - Total Spend for all Milestones
Clay Lining		
Subtotal Clay Lining	\$14,700,000.00	\$15,668,298.56
On Farm Works in CIA and Kerabury		
Subtotal On Farm Works in CIA and Kerabury	\$18,083,510.00	\$18,083,510.00
Total Channel Control in Kerabury Channel		
Subtotal Total Channel Control in Kerabury Channel	\$1,090,909.00	\$1,090,909.43
Total Channel Control in West Coleambally Channel		
Subtotal Total Channel Control in West Coleambally Channel	\$909,637.00	\$909,637.55
On Farm Works in West Coleambally Channel		
Subtotal On Farm Works in West Coleambally Channel	\$5,301,960.00	\$5,301,960.00
CICL Administration		
Subtotal CICL Administration	\$3,978,612.00	\$3,008,937.50
Total	\$44,064,628.00	\$44,063,253.04

Appendix 3 to

CICL Round 1 PIIOP Final Report

Dated 12 July 2016

SP1 Lessons Learned



CiCL's original plan was that the work associated with SP1 would be divided into three one-year 'blocs' of work to be divided between two contractors who would be engaged for one year's work at a time. The logic of this approach was it would reduce the risk of CiCL being at the mercy of a single contractor for a three-year period and that the competitive tension associated with having two contractors in effect competing for the following year's work would act as 'brake' that would reduce the prospect and quantum of contract variations – this logic needed to be seen in the context of CiCL not having undertaken clay re-lining on the scale associated with SP1 previously and not having previously worked with either of the contractors. This plan had to be revisited when one of the two preferred contractors identified in an open-tender process subsequently indicated that he was not interested in a portion of the first year's work. CiCL therefore engaged a single contractor, Northern

Construction Group (NCG), to undertake all of the year 1 work. On the basis of its performance in year 1, NCG were subsequently awarded the remaining two year's work. CICAL envisaged that an equal amount of re-lining work would, subject to weather conditions, be accomplished in each of the three years over which SP1 would be delivered. CICAL had to 'recalibrate' its expectations in the face of wetter than expected conditions in the Main Canal bed in year 1 (2012). While 'hot spot' mapping undertaken by David Allen in 2003 and 2004 proved highly accurate, the extent of problems at each of the hot spots in the Main Canal varied greatly once NCG started trenching – in some cases, the clay lining was intact but much reduced and at the other end of the spectrum, non-existent. This fact and the wetter than expected conditions dictated a change of plan and much of year 1 was devoted to investigation of all sections to be re-lined over the three-year project. This revised approach meant that at the end of the year 1 works period, CICAL and NCG had a much clearer idea of the work that lay ahead but less re-lining had been accomplished.

After the completion of the year 1 work and before the commencement of year 2 work, CICAL and NCG focused on establishing clay stockpiles immediately adjacent to the year 2 worksites in order that the NCG's resources could be focused on in-channel works during the following winter shutdown period. This same approach was taken in the interval between the end of the year 2 and the beginning of year 3 works. As a result, daily re-lining rates in years 2 and 3 were significantly higher than in year 1.

Quite apart from the matter of work method, CICAL came to better appreciate the importance of specialist plant, digital survey, laser-guided excavation and profiling, and experienced operators (with the latter element being at least as important as the others) on work of the scale undertaken in SP 1. Digital survey allowed for a more accurate estimation of cut and fill quantities and laser-guided profiling gave CICAL confidence that the required cross-sections profiles would be met. NCG's experience allowed it to readily adapt to soils that were different in character throughout the CIA and different to those they had previously encountered.

Notwithstanding that CICAL's due diligence established that NCG had a good safety management system and a very good safety record, and that NCG would have preferred not to have another company monitoring its safe-working, the appointment of an independent safety manager holding Federal WHS accreditation provided additional safety assurance for CICAL at a time when its senior managers were having to divide their attention across five sub-projects and multiple work sites. Given the complexity and risk associated with clay re-lining on a large scale, CICAL would not hesitate to again appoint an independent safety manager if the contractor undertaking the re-lining did not hold Federal WHS accreditation in their own right.

Appendix 4 to

CICL Round 1 PIIOP Final Report

Dated 30 January 2017

Examples of PIIOP Round 1 On-farm Works (SPs 2 and 5)

New Recycling System on F522 (SP2)



New Stop & Improved Layout on F103 (SP2)



Solar Tracking Array for Stock Watering System on F2002 (SP5)



Case Study 1

Proponent Objective: To generate water savings on farms 539 & 660 through improved irrigation layouts, an upgraded water recycling system and improved soil condition

Works undertaken:

- lasering & re-forming of irrigation layouts,
- upgrading of water recycling system, and
- application of chicken litter

Process:

All work was informed by a Whole Farm Plan and professionally conducted survey work. Contractors remove existing fences, irrigation structures and channel banks and laser-guided plant was used to re-shape and realign paddocks and to form new irrigation banks, channels and drains. Two new water recycling systems were constructed, complete with new sumps and pumps. Throughout this process, large amounts of chicken litter were spread across and into all paddocks.

The two aerial photographs on the following page, of Farm 539 illustrate the nature of the work undertaken on both farms. Note:

- the more regular shape of the paddocks after the PIIOP work; and
- the absence of curved 'contour' channel banks (which complicate water flow, the movement on equipment, harvesting and water recycling) after the PIIOP work

Outcome:

The improved irrigation layout and laser levelling allows for faster watering and the upgraded recycling system means that more water can be retained on-farm. The proponent estimates that he has saved, and will continue to save, 200ML p.a. across these two farms and tasks requiring machinery (e.g. soil preparation, planting and harvesting) take 30% less time than previously.

Farm 539 - Before



Farm 539 - After



Upgraded Recycle System



Laser levelled paddocks, new layout and new structure



Newly laser levelled paddock with new layout (on the left)



Case Study 2

Proponent Objective: To generate water savings on farms 143 & 546 through improved irrigation layouts over 160ha; installation of a recycling system to capture run-off; and improved structures for increased flow and improved regulation.

Works undertaken:

- realignment/squaring-up of paddocks
- laser levelling of paddocks
- re-establishment of irrigation banks and beds
- construction of recycle drain and pumping stations
- Purchase of new and improved structures

Process:

All work was informed by a Whole Farm Plan. The squaring up of paddocks involved chisel ploughing to a depth that allowed for the laser levelling. The laser levelling process was followed by the re-establishment of banks and irrigation beds. A contractor excavated the recycle drain according to the Whole Farm Plan and a new pump was put in place. All earth and concrete work was undertaken by local contractors/suppliers.

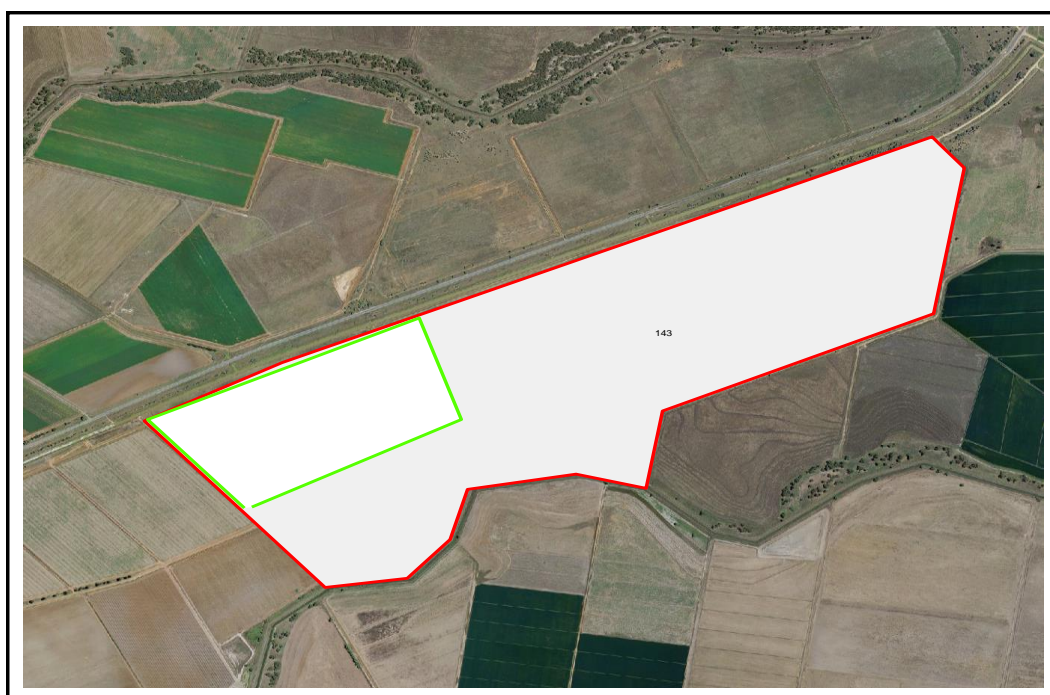
Outcome:

The proponent advises he has saved approximately 200ML of water p.a.

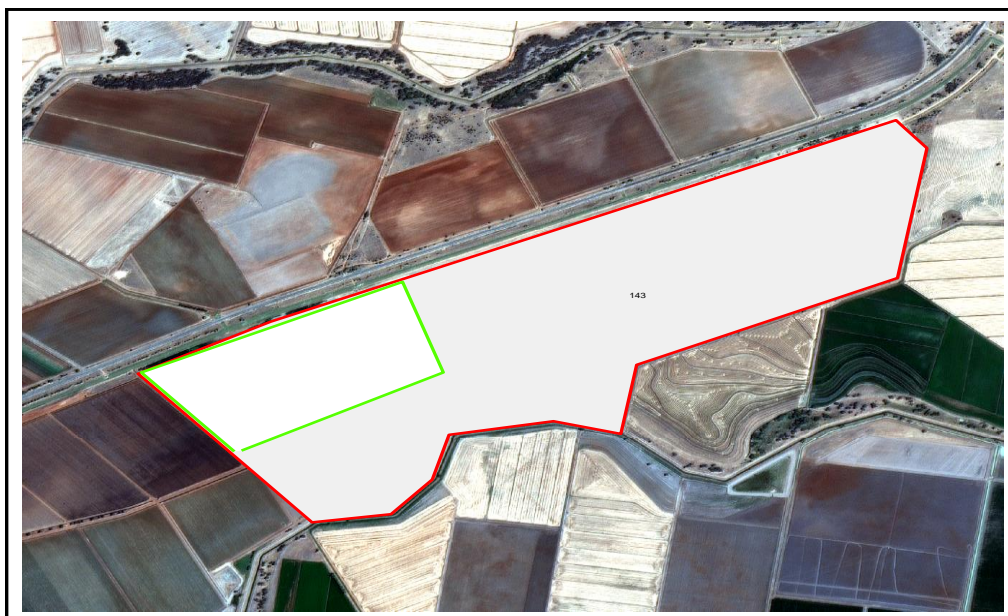
Farm 143 – New recycle system



Farm 143 – Before



Farm 143 – After



Farm 546 – Before



Farm 546 – After

