

STATEMENT OF ROBERT GERARD KEOGH

QUEENSLAND TO WIT

I, **ROBERT GERARD KEOGH**, of c/- SunWater Limited (**SunWater**), Level 10, 179 Turbot Street, Brisbane in the State of Queensland do solemnly and sincerely declare, as follows:

Background

- 1 I refer to the Requirement to provide a statement to the Commission of Inquiry dated 2 September 2011 (**Requirement**) in relation to the LN1 drain and any other drain owned or operated by SunWater in Emerald.
- 2 SunWater owns and operates the following drains within and in the vicinity of urban and light industrial areas of Emerald:
 - (a) Drain LN1 (from distance 4,500m to 10,650m or end of drain);
 - (b) Drain LN1/2 (from distance 1,700m to 4,737m or end of drain);
 - (c) Drains LN1/2/1 and LN1/2/2,(referred to collectively as “**drains**” and highlighted in Figure 1)
- 3 LN1 is the primary drain, smaller contributing drains are given hyphenated numbers representing their parent-child relationship.

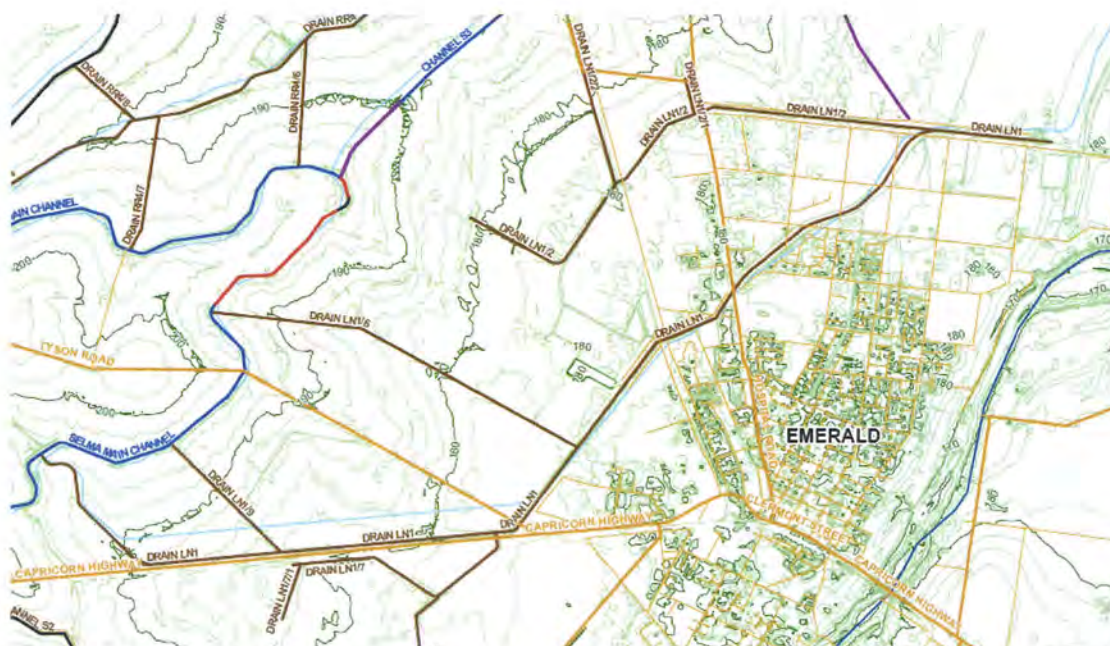


Figure 1 LN1 Drainage system and Contours

- 4 The LN1 drain system flows from a ridge to the west of the Selma Main Channel. Water flows through a series of channel cross drainage structures (pipes and culverts) into contributing drains (refer Figure 1). The drains then flow through the irrigation development picking up storm runoff and irrigation tailwater. The LN1 drain crosses the north west sector of the Emerald town. The LN1/2 drain skirts the northern edge of the current town development. There is a new proposed industrial development to the north of LN1/2 (refer paragraph 44).
- 5 The LN1 drainage system discharges into a natural depression to the north east of Emerald. It is understood that this depression flows into the Nogoa River downstream of Emerald, but SunWater has no involvement with that aspect of the system. SunWater holds easements over some areas of this depression for the purposes of drainage.
- 6 Drain LN1 is 10,750 metres long from end to end.

History and function of the SunWater owned and operated drains in urban Emerald

- 7 The Emerald Irrigation Area forms part of the Nogoa-McKenzie Water Supply Scheme. The irrigation area was developed during the late 1960's and early 1970's and supplies water for cotton, winter crops and citrus. The area lies downstream of Fairbairn Dam and comprises the Selma system on the left (looking downstream) bank and Weemah system on the right bank of the Nogoa River. Drain LN1 and contributing drains are part of the Selma system.
- 8 The Queensland Government, through the then Irrigation and Water Supply Commission (IWSC), compulsively resumed lands in the Emerald Irrigation Area and resubdivided the lands. Attachments RGK1 and RGK2 are sample letters to landholders at the time (early 1970s). The letters explain the process undertaken to develop the Emerald Irrigation Area.
- 9 The IWSC undertook a complete redesign of the layout of land in the Emerald Irrigation Area. The first steps of this process included surveys to define the topographical layout and suitability of soils for irrigation.
- 10 The layout of supply channels was governed by following topographical contours such that a gravity supply to farms could be achieved.
- 11 The layout of drains was chosen to follow natural drainage lines in the landscape.
- 12 Farms were each designed to contain approximately 450 acres of soils that were suitable for irrigation with workable slopes and shapes.

- 13 The design process of locating supply channels, drains and farm layouts was an iterative process to optimise the design.
- 14 The land on each irrigation farm was designated as either irrigable land, non-irrigable land, or dry land. The latter was land that could not be supplied with water via gravity. Non-irrigable land contained soils that had been assessed as not suitable for irrigation.
- 15 Each irrigation farm was granted a water allocation of 1.33 acre feet per acre of irrigable land.
- 16 The LN1 drains were constructed in the early to mid 1970s to provide drainage for limited stormwater runoff from irrigated farms, roads, non-irrigable areas of the catchment and to provide efficient removal of tailwater from irrigation farms. The drains were designed and constructed by the then IWSC as part of the Emerald Irrigation Area under the direction of its Chief Irrigation Engineer
- 17 The Irrigation Area Design Manual (IAD) notes that "Agricultural drainage may be defined as the removal and disposal of excess water from agricultural land. The source of the excess water may be precipitation, irrigation water, overland flow or underground seepage or for special purposes such as leaching salts from the soil".
- 18 The Emerald Irrigation Area design criteria included a flood frequency of 1 in 10 years for agricultural or improved lands and 1 in 2 years for uncultivated or unimproved lands¹.
- 19 The design criteria for the drains included a provision to inundate up to 30% of a property for up to 48 hours during the design event². This means that parts of the properties adjoining a drain were used as a retention storage. The peak capacity of the drain was therefore less than the peak runoff during the design event.
- 20 Drawings 33691 and 33690 (Attachment RGK3) indicate that the design flow level in Drains LN1 and LN1/2 is up to 700mm above the natural surface of the adjacent land.
- 21 When the LN1 system was designed and constructed almost all of the adjacent land was rural.

¹ IAD Design Manual, Chapter 9 p4

² IAD Design Manual, Chapter 9 p4-5

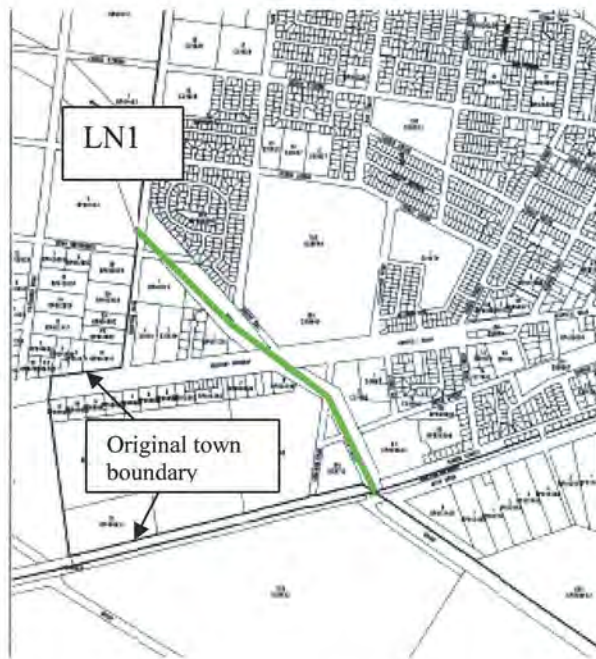


Figure 2 Only section of LN1 in the original town boundary

- 22 The design of the drains did not incorporate any capacity for overbank or breakout flows from the Nogoa River.
- 23 The design of Drain LN1 did include provision to drain storm water from approximately 482Ha of the town of Emerald as it existed at the time the drain was constructed. (Refer drawing 159160 (RGK5).
- 24 The Commissioner of Water Resources executed an agreement with CHRC (then Emerald Shire Council) on 27 November 1989 for a term of 20 years (deemed to be in operation since 1 July 1989) to pay drainage rates levied for the part of the town then serviced by the drainage system (**Agreement**)(RGK4).
- 25 The agreement was novated to SunWater in 2000 as part of the legal processes that established SunWater.
- 26 The Agreement permits the Council to discharge stormwater into SunWater Drain LN1 from *'certain land (RGK5) within the bounds of the township of Emerald'* and the Commissioner (SunWater) to maintain Drain LN1 *'so as it remains capable of carrying such stormwater that would normally be carried by the drain'*. The lands within the Emerald town area that drained to LN1 are all located south of the drain.
- 27 The Agreement covers an area of 480 hectares, as defined in SunWater Plan No 159160 (RGK5), to be altered where both parties agree. The Agreement states that Council *'must notify the Commissioner (SunWater) of any proposed alterations to the benefited area'*. Annual charges were set at

'50 per centum of the drainage rate levied on landholders served within the Drainage Area'.

- 28 To my knowledge Council has not provided any notification of any alteration to the benefited area under the agreement.
- 29 I am aware that areas of urban development that are outside of the original benefited area now drain into the LN1 drainage system.
- 30 Since the end of the original term of this agreement, SunWater and Central Highlands Regional Council (CHRC) have been engaged in negotiations to either renew the agreement on commercial terms or to hand the drains servicing of the Emerald Town area over to the CHRC.
- 31 SunWater has continued to provide the services defined under the Agreement.
- 32 The town boundary of Emerald has been extended by the CHRC (or predecessors) since the development of Drain LN1 (Refer Figure 3 and Figure 4). I am not aware of when the extension came into effect, nor am I aware of any consultation with SunWater by CHRC of the potential for impact on the drainage system.
- 33 The area shaded in green in Figure 3 was assumed to be unimproved land at the time the LN1 Drain system was designed. The development of this land increases the total volume of runoff and the magnitude of the peak flow during an event in the LN1 system. The flow level in the drains will be consequently higher than the design flow level during some events. The natural surface level in parts of the area shaded green are lower than the design flow level in the drains.

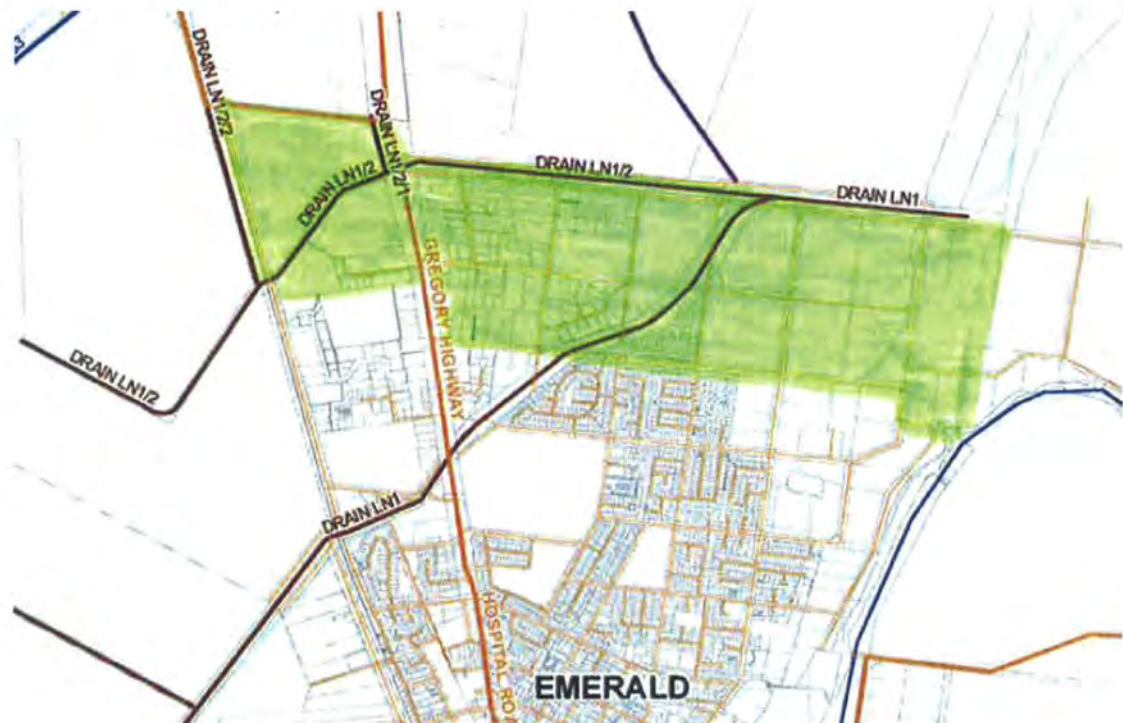


Figure 3 Area of Emerald Town extension since the development of LN1



Figure 4 Extract from Central Highlands Regional Council Planning Scheme

The Development process for the original construction of the LN1 drain

- 34 The Emerald Irrigation Project was declared after the submission to Parliament of the "Report on Emerald Irrigation Project" by the Irrigation and Water Supply Commission and Department of Primary Industries in January 1968. The recommendations in the Report included the constitution under the Irrigation Act of the Emerald Irrigation Area.
- 35 Under the provision of the Irrigation Act approval of the Legislative Assembly by resolution was required before significant work could be undertaken on the project.

Any development applications or approvals in the last 10 years related to the LN1 drain?

36 The following table sets out details of the development applications for easements or access through the LN1 drain notified to SunWater in the last ten years:

Date of Original SunWater Notification	Application Type	Applicant / Notifier	Approved / Not Approved	Who SunWater responded to	Further Comment
21/11/2006	Access through SW Drain LN1 to install sewer main	Crocker & Associates Pty Ltd on behalf of Halcagni Pty Ltd	Approved SW Response 5/01/2007	Crocker & Associates Pty Ltd	No Storm Water discharge issues
6/05/2008	Development Application for a Material Change of use (Transport Terminal) Application No: D066/08 – Application included a request for SunWater to grant 2 easements through Drain LN1 for sewer and water main crossing.	Notified by Gassman Development Perspectives Pty Ltd on behalf of Buildev Development QLD Pty Ltd	Approved by CHRC subject to applicant complying with SunWater's requirements SW response 22/05/2008	CHRC	SunWater agreed to allow sewerage and water pipe access over Drain LN1 via separate registered easements. It was in subsequent correspondence to SunWater from the applicant and CHRC, that identified that it was proposed to discharge storm water into SunWater's Drain LN1. In further correspondence from SunWater to both the applicant, Buildev Pty Ltd, and CHRC, it was made clear that SunWater would not accept any increase in storm water discharge from the development into SunWater's drainage system
29/2/2009	Easement under LN1 for sewer and water supply mains	CHRC	Approved July 2009	CHRC	No Storm Water discharge issues
13/05/2009	Access through SW Drain LN1 (via easement) to install sewer main	SCN Pty Ltd (John Jolly) on behalf of Central Highlands Regional Council	Approved 27/06/2009 SW Response 7/07/2009	SCN Pty Ltd	No Storm Water discharge issues
20/7/2010	Access through SW Drain LN1 (via easement) to install sewer main	Geju Pty Ltd	In Progress		No Storm Water discharge issues

SunWater's involvement, if any, in development applications or approvals for developments adjacent to the LN1 drain

- 37 The *Irrigation Act 1922* and *Water Resources Act 1989* (both now repealed) required the approval of the Commissioner of Water Resources for any subdivision of lands within an Irrigation Area. The Emerald Irrigation Area included the area surrounding Emerald but specifically excluded the town of Emerald. (Ref RGK6 SunWater Plan No 145969). The requirement for special approval of subdivision within an Irrigation Area was repealed at some time in the 1990s, possibly when the *Integrated Planning Act* was enacted. The requirement was never included in the *Water Act 2000*.
- 38 No approvals by SunWater or any of its predecessors have been necessary for subdivisions that have occurred within the original town of Emerald.
- 39 SunWater is not a referral agency for development applications. However SunWater sometimes receives notification of development applications (DAs) from Council when SunWater is the adjoining landowner to land which is proposed to be developed. SunWater also receives DAs that include easements over the drains. SunWater may not be notified of all DAs.
- 40 When DA notifications are received by SunWater the Property Services group undertakes an initial assessment. As part of the initial assessment, details of the application are reviewed by regional operational staff, (Area Operations Manager (AOM) and Service Manager), for any possible operational issues identified in the notification. The Property Services group then provides a response to the relevant council, and, if appropriate, the applicant. The response is based on SunWater's operational requirements and any possible impacts by the application on SunWater's property or infrastructure.
- 41 Once the council has made a decision regarding the approval or non-approval of the DA, the council then provides official notification to SunWater, via the Property Services group.
- 42 If a DA is approved by council, SunWater's approval must be given before an easement can be granted across SunWater's land (generally for the installation of sewer mains or water supply mains). The granting of the easement must be made by SunWater's CEO.

SunWater's involvement, if any, in development applications or approvals for developments which deposit stormwater into the LN1 drain

- 43 If SunWater is notified of a DA, SunWater makes it very clear in all of its responses that no stormwater from the proposed development site is to be discharged into SunWater drainage or channel systems. SunWater has not approved developments to deposit increases in stormwater flow into the LN1 drain.
- 44 The only recent development application received by SunWater that includes access to the LN1 drain system regards a proposed development bounded by Wills Road, the Gregory Highway, Drain LN1/2/1 and SunWater's Drain LN1/2. The development is known as Centra Park Stages I & II. The developer is BD (QLD) Pty Ltd (subsidiary of BUILDEV Development Pty Ltd).
- 45 SunWater's response to the above DA demonstrates its policy of managing the drains within the constraints of the original design. A summary of the correspondence is as follows:
- (a) 22 May 2008, SunWater wrote to CHRC expressing concern over stormwater run-off of the proposed development.
 - (b) 26 August 2008, CHRC wrote to SunWater with a decision notice on the development application. One of the proposed conditions noted that stormwater could not be discharged to SunWater's channel (LN1/2) without the prior written approval of SunWater.
 - (c) On 19 October 2008, CHRC sought the principles SunWater might apply to the discharge of stormwater.
 - (d) 20 October 2008, SunWater sent an email to CHRC explaining it was SunWater's position not to accept discharge from urban development. SunWater also raised the possibility of transferring the drainage system to CHRC given the urban encroachment onto the drainage system.
 - (e) 27 October 2008, CHRC formally advised Builddev Development (Qld) PTY Ltd of the CHRC approval of the development.
 - (f) 17 December 2008, SunWater advised the developer that SunWater would not give consent for the discharge of stormwater.
 - (g) 17 December 2008, SunWater advised CHRC that SunWater would not give consent for the discharge of stormwater.

- (h) 19 January 2009, CHRC wrote to SunWater to state that it was not seeking SunWater's permission for the discharge of stormwater but rather providing SunWater an opportunity to apply conditions. CHRC expressed the opinion that under Common Law SunWater did not have a right to refuse the discharge of stormwater.
- (i) 26 March 2009, SunWater wrote to CHRC outlining concern that accepting discharge from the development may worsen flooding impacts to properties adjacent to the drain. SunWater went on to dispute CHRC understanding of the common law and pointed out that the developers own hydrology study indicated an increase in runoff of between 43.2% and 57%.
- (j) 6 May 2009 CHRC wrote to SunWater stating that it was not Council's intention "to give SunWater a means to impede development".
- (k) 20 May 2010 SunWater wrote to the developers to restate that the discharge of stormwater had not been approved and that unauthorised works in SunWater's drain were to be rectified.

46 On 17 September 2010, I met with CHRC engineering staff to explain SunWater's concerns that continued development was adversely impacting on the drainage system and the risk of flooding. I recommended to CHRC staff that SunWater gift the LN1 drainage system to Council. This would allow Council to integrate future development, the local planning scheme, and plans to increase the capacity of the drains. During this meeting I also presented a second option, namely that the Agreement be renewed and refreshed. I stated that such an agreement should set out a larger town area covered by the agreement. SunWater operates in a price regulated environment. The Queensland Competition Authority (QCA) is the pricing regulator.

47 SunWater can only invest in a capital expansion of its infrastructure if either the QCA approve the inclusion of the investment in prices or SunWater provides the service under a commercial agreement.

48 The provision of drainage services to urban areas is not core business for SunWater.

49 The provision of drainage services to urban areas is core business for Council.

Agreements and interactions between Central Highlands Regional Council and SunWater regarding Maintenance on the LN1 drain

50 SunWater undertakes the maintenance on the LN1 drains. Any maintenance requirements for drains in the Emerald area are co-ordinated by SunWater's

Civil Maintenance Supervisor. Local SunWater personnel maintain good working relationships with CHRC staff and regularly discuss maintenance programs.

- 51 SunWater utilises SAP_PM work schedules, work instructions and work orders to program and record planned and unplanned drain maintenance works on the LN1 drain. Preventative maintenance (PM type) work orders are raised for recurring drain maintenance items such as:
- Yearly mechanical and chemical vegetation control. Several of the drains in the Emerald Irrigation Area are burnt to control vegetation. These burns are co-ordinated by local SunWater personnel with assistance from representatives of CHRC, Main Roads, QR and the fire authorities. This is particularly the case in LN1 due to the very close proximity of the residential and industrial areas.
 - Comprehensive condition assessment approximately every 10 years. The last comprehensive condition assessment was completed in 2000. However maintenance staff undertake routine surveillance of the condition of the drain. The information gathered from the surveillance is used to schedule the vegetation control outlined above.
- 52 Corrective and refurbishment works are also undertaken by SunWater as required. The need to schedule corrective maintenance maybe the result of surveillance by SunWater staff or a report by customers, members of the public or the local council.
- 53 Siltation within the drains in the Emerald Irrigation Area is a continuing corrective maintenance issue. This is particularly so after high intensity storms wash silt from farms with little ground cover after the cotton season. Some of the reports listed in paragraph 64 of this statement relate to this issue.
- 54 In 2006, SunWater carried out a survey of its assets within the Emerald Shire Council, the results of which were produced in the report *Roads and Bridges Project, Confirmation of Responsibilities with Emerald Shire Council*.
- 55 In June 2006, SunWater wrote to Emerald Shire Council (now CHRC) to clarify the responsibilities for road maintenance within the shire (a copy of this correspondence is attached to the Report: *Roads and Bridges Project, Confirmation of Responsibilities with Emerald Shire Council*), and to advise that SunWater would no longer assist the council with the maintenance of public roads.

- 56 Prior to the above date, SunWater had, as part of the maintenance of its assets, maintained some Council public road assets.

Information about the effect on flooding, if known, of the crossing on the Gregory Highway over the LN1 drain

- 57 The information contained within SunWater As Built plans associated with the Gregory Highway Crossing (Drawings: 38083A – General Layout (RGK8); 33690D – Drain LN/1 Longitudinal Section 4M00' – 6M3600'(RGK3)) show that the road crest and the design flow level in the drain downstream of the crossing are approximately equal. This means that the water will be flowing over the highway at the design flow.
- 58 The IAD design manual for drains notes that the depth of water over the road at the design flow can be as high as 300mm.
- 59 The design flow concept is only relevant when the water in the drain is from a local runoff event.
- 60 The peak of the 2010-2011 flood at Emerald was on the 31 December 2010.
- 61 There was virtually no rainfall in the LN1 catchment in the three days leading up to the flood peak. This is supported by daily rainfall data from BoM shown in Figure 5. It follows that the flooding in the vicinity of LN1 at or near the peak of the Emerald flood event could only have been the result of water from the Nogoa River.
- 62 Drain LN1 is located on ground that is a naturally low area. Accordingly, and in light of the lack of rainfall leading up to the peak of the flood peak, it is apparent that the flood water from the Nogoa River flowed into Drain LN1 and the LN1 drain could not have contributed to the flood waters in Emerald.



Figure 5 Daily Rainfall Records for Emerald from BoM

- 63 Following the January 2008 flood event, a brief report by the then AOM Neville Wogandt indicated that during the January 2008 flood event the LN1 drainage system worked well, considering the size of the event. It appears that staff from CHRC also confirmed this opinion.

Other Information

- 64 There are several reports on the drainage system in the Emerald Irrigation Area, particularly the siltation issues experienced over the years. Some of these reports are listed below.

Reports:

1. "Draft – A Study of Operation and Maintenance Aspects of the Emerald Irrigation Area Surface Drainage System – Siltation" by [REDACTED] March 1998.
2. "Operation and Maintenance Aspects - Emerald Irrigation Area – Surface Drainage System – Siltation Appendices -" by [REDACTED] – Consulting Engineer – Project Coordinator May 1998.
3. "Emerald Irrigation Area – Siltation Removal Project – Report May 2001" by [REDACTED] - Consulting Engineer.

4. "Emerald Irrigation Area – Drainage Management Study – Project Report " Department of Natural Resources Qld – February 1998
5. "Emerald Irrigation Area – Drain Audit – Volume 1 – Report" by [REDACTED] – Consulting Engineer – December 2000.
6. "Emerald Irrigation Area – Drain Audit – Volume 2 – Appendices" by [REDACTED] – Consulting Engineer – December 2000.

AND I MAKE this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act 1867.

Sworn and Declared at Brisbane)

this 15th day of September 2011 in)

the presence of:)

Signature of the declarant

~~Justice of the Peace~~

~~Commissioner for Declarations~~

Attachments

- RGK1 – Letter from IWSC re Emerald Irrigation Scheme Development – 20th April 1970
- RGK2 – Letter from IWSC re Land Dealing Process – 20th July 1973
- RGK3 – Long Section Drawings for Drains LN1 and LN1/2 in the vicinity of the town of Emerald
- RGK4 – Drainage agreement with Central Highlands Regional Council
- RGK5 – Emerald Irrigation Area Existing Stormwater drains
- RGK6 – Emerald town exclusion from Subdivision approval - SunWater Plan No 145969
- RGK7 – Correspondence with respect to the Willes Rd Development Application by BUILDEV Development Pty Ltd
- RGK8 – SunWater drawing 38083 - LN1 and Gregory Highway Crossing