

ENGINEERING INVESTIGATION REPORT

LAIDLEY SALEYARDS – CATTLE DIP
2096 LAIDLEY ROSEWOOD ROAD, LAIDLEY, QLD

ISSUE 1 - | PROJECT NO. S2324164

Attention:

[REDACTED]
Lockyer Valley Regional Council
26 Railway Street (PO Box 82)
Gatton, QLD 4343

Dear [REDACTED]

Re: Structural Engineering Report of Laidley Saleyards, Cattle Dip

We advise that our inspection was undertaken on 6/11/2023 by our Structural Engineer, [REDACTED]

The findings in this report are limited to the commissioned scope of inspections and reporting (refer report) and to areas of general access within and surrounding the structure. Some areas of the structure may have been concealed or direct access not possible and thus not inspected.

This report is specifically limited to the visible structural elements that were inspected in accordance with the scope of inspections.

We trust this report meets your requirements at this stage. Please contact our office if any further information is required.

King regards

[REDACTED]
Director

Kehoe Myers Consulting Engineers

A handwritten signature in black ink, appearing to be 'C. Myers'.

Version	Date	Prepared
1	27/11/2023	[REDACTED] BEng, CPEng, RPEQ 13928, MIEAust

1. INTRODUCTION

Reference is made to the our commission wherein this office was requested to carry out a structural inspection and to report on the existing plunge cattle dip at the Laidley Saleyards.

We advise that our inspection was undertaken on 6/11/2023 by our Structural Engineer, [REDACTED], in the presence of [REDACTED] from Lockyer Valley Regional Council.

At the time of our inspection the dip had been completely drained and cleaned, and access to walk to the base of the dip structure was possible. As was reported to us the surrounding area to the dip had also been recently cleaned to remove all debris.

No drawings or structural information on the dip are available, based on a date marking in the concrete drainage pit, we believe the structure to have been constructed in 1972.



Photo 1. Aerial View of Laidley Saleyards

2. INSPECTION FINDINGS

2.1 Existing Structure Description

The cattle dip is approximately 13 m long x 1 m wide and is a maximum of 2.3 m deep at the entry (North-Western) end rising to ground level at the exit (South-Eastern) end, refer photo 2 aerial view and photos 3 & 4. The level of the liquid in the dip appears to be approx. 1.8 m at the entry (deep) end.

The main dip has a curved metal sheet roof over the full area of approx. 2 m wide, centred on the dip and overhanging each side.

On each side of the dip there is a fenced area with chain wire to the top and sides. At the exit there is a drained open pen area.

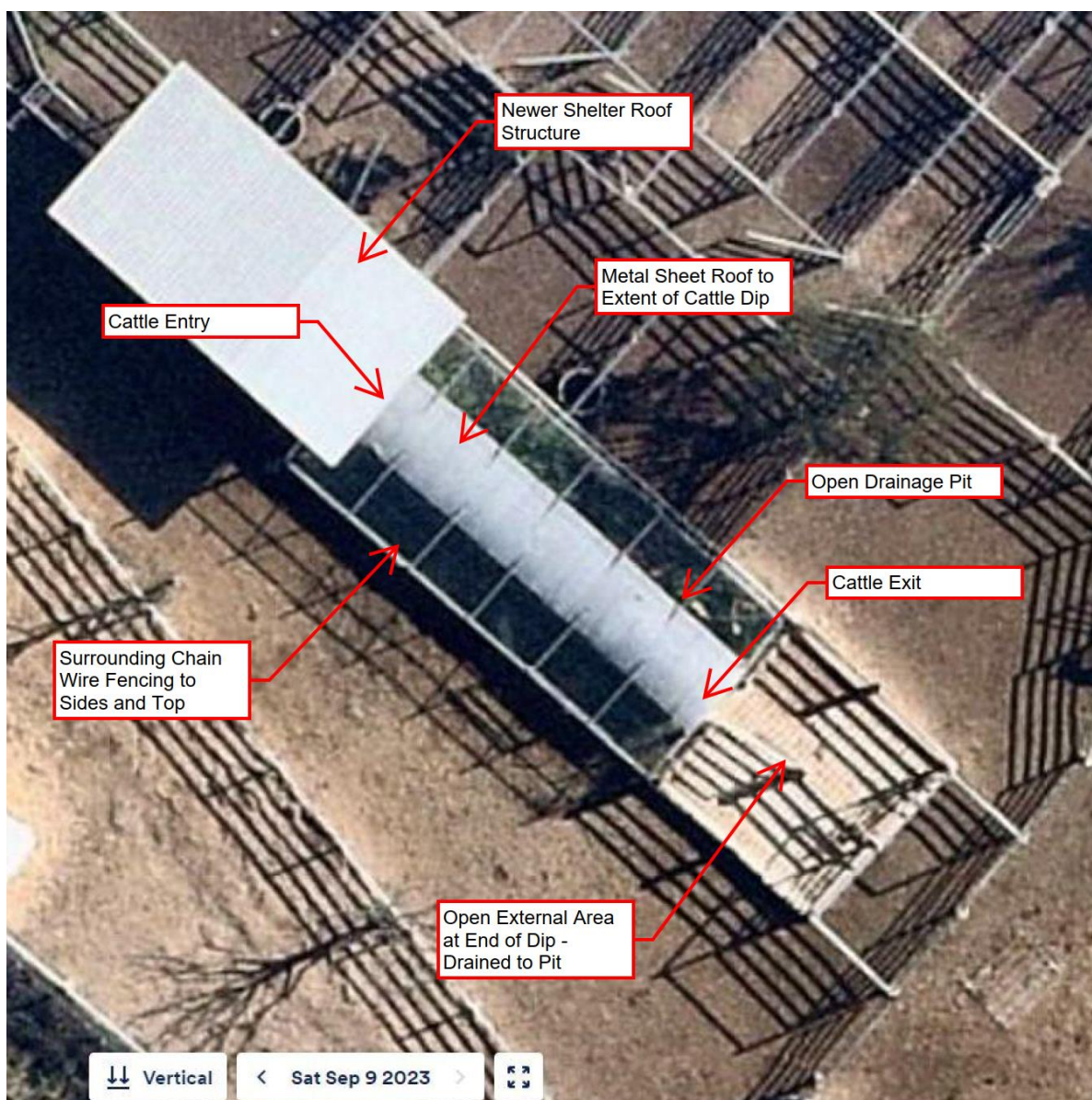


Photo 2. Aerial View of Laidley Saleyards

2. INSPECTION FINDINGS



Photo 3. North-Western End



Photo 4. Southern Side

2.2 Concrete Dip Structure

The dip is a formed insitu, in ground concrete structure, refer photos 5 & 6. The wall and footing sizes, as well as steel reinforcement are unknown.

The concrete walls of the dip act as retaining for the external ground and the dip liquid. The walls on both sides have a visible bow inward towards the deeper end, it is not clear whether this bow is related to the original construction.

There are several cracks to the concrete walls, the worst being to the deeper end with diagonal cracks of similar nature on both sides, refer photos 7 & 8. The worst-case width is approx. 2.5mm towards the middle of the crack, refer photo 9. The liquid in the dip would be leaking through the visible large cracks in the walls. There is no noticeable vertical differential movement to the concrete dip.

Above the ground level to each side wall there is a thin metal screen for the liquid splash from the dip, refer photo 10. Near the exit end where the sheets join, they are corroded and have become detached and are sticking in to become a hazard for the animals, refer photos 11 & 12.



Photo 5.



Photo 6.

2. INSPECTION FINDINGS



Photo 7.



Photo 8.



Photo 9.



Photo 10.



Photo 11.



Photo 12.

2. INSPECTION FINDINGS

2.3 Dip Roof Structure

The dip has a timber framed roof with curved metal roof sheeting to the full length. The timber roof framing is generally in a poor condition with significant timber decay visible in some areas, refer photo 14. The roof structure has generally reached the end of its serviceable life.



Photo 13.



Photo 14.

2.4 Dip Drainage

Towards the south-eastern corner of the dip there is an open drainage pit that collects 2 inlet pipes one from the dip and the other from the southern end pen area, these are both at approximately the same level, refer photo 15. The pit outlet pipe runs towards the front boundary, we could not find the intended discharge point of this pipe and it appears damaged/blocked.

There is a small bund wall to the edge of the exit area pen to the dip, refer photos 17 & 18. As reported during our inspection overflowing from this area generally occurs and flows into the adjoining yards. This area is open and due to the ineffective bund would overflow into the dip and/or adjoining yards during rainfall.



Photo 15.



Photo 16.

2. INSPECTION FINDINGS



Photo 17.



Photo 18.

3. CONCLUSION & RECOMMENDATIONS

3.1 Conclusions

From our engineering inspection we have identified several defects with the cattle dip structure and its current operation, including:

3.1.1 Concrete Dip Structure

- Concrete structure to the dip has significant cracking to the vertical walls towards the deep end on both sides. It is likely that the concrete was constructed with minimal reinforcement and to no standard for concrete structures. The walls of the dip appear to be bowing inward, it is however unclear whether or not this is how it was originally constructed.
- The large cracks to the walls would be causing ongoing leaking of the dip liquid and contamination of the surrounding soils.
- The dip appears to have been constructed 50+ years ago and has reached the end of its serviceable life.
- Given the age, unknown construction details and damage/cracking observed on site, we do not believe there would be an economical method for repair which would provide a long-term benefit.
- The metal screening to the side walls is in a poor condition and presents as a hazard to the livestock, and in particular at the exit of the dip where it can be seen to be protruding inwards. As discussed, this issue should be addressed immediately.

3.1.2 Dip Roof Structure

- The roof timber framing has significant timber decay/rot visible.
- The roof structure appears to have reached the end of its serviceable life and requires replacement.
- As related to the conclusions with the drainage, a larger roof would be required to give protection to the areas where rainfall could drain into the dip.

3.1.3 Dip Drainage

- The drainage system for the dip has numerous issues with how the hazardous liquid in the dip is contained to the dip area and where/how any overflow drains away.
- The open pit and end pen areas allow rainfall to dilute the dip as well as overflow into the adjacent yard areas. The small bund wall to the edges does not provide adequate storage for liquid in this area and would overflow during rain events.
- The overflow liquid is hazardous and should not be discharged into the adjoining cattle yards or watercourses.

There does not appear to be any specific Australian Standard for the construction of a plunge cattle dip, however with consideration for the use and appropriate drainage and containment, treatment and disposal of waste dip liquid a solution could be found.

3. CONCLUSION & RECOMMENDATIONS

3.2 Recommendations

Given the issues stated in the conclusions, consideration for the complete reconstruction and re-design of the dip would be required to provide a plunge type dip.

It would not be economical to attempt to repair the existing concrete dip and timber roof structures, whilst addressing the issues relating to the containment and treatment of the dip liquid.

4. DISCLOSURE

The findings in this report are limited to areas of general access within and surrounding the structure. Some areas of the structure may have been concealed or direct access not possible and thus not inspected.

This report is specifically limited to the visible structural elements that were inspected in accordance with the report scope.

This report does not address items that are of a non-structural nature as these matters may be more appropriately addressed by an Architect, Building Inspector, Building Contractor, Occupational Hygienist or Pest Controller.

No liability is inferred in relation to the elements not inspected or reported on nor on any future status of those elements.

In our opinion, any structural work outlined in this report constitutes repair work only and should not affect the overall structural integrity of the building in its original state when it was constructed. We assume that the original construction was built and approved in accordance with the relevant Local and State Government Regulations of the time.

This report does not attempt to upgrade and/or ensure that the undamaged structural elements comply with current Regulation requirements.