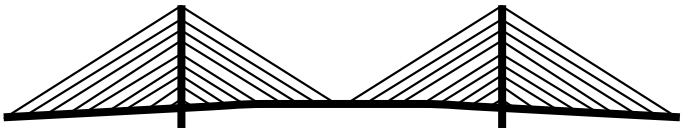
David C. Jones (Consulting Engineers) Pty Ltd
ACN 001 816 039 ABN/GST No. 65 001 816 039
51 Lewin Street, Inverell, NSW, Australia, 2360
Telephone (02) 6721 0222 International +61 2 6721 0222
Facsimile (02) 6721 0111 International +61 2 6721 0111
Mobile 0427 210222 International +61 427 210222
E mail: david@dcjones.com
David C. Jones: BE, MEngSc, FIEAust, Chartered Professional Engineer No 384884, NPER Civil and Structural
Registered Professional Engineer Queensland No. 2125
Registered Building Practitioner Victoria No. EC-2289

David C. Jones
Consulting Civil and Structural Engineers



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Flood Forecasting for Inverell SES as a Free Community Service Since 1976

27th September 2021
2021094366 is Our Reference

General Manager,
Inverell Shire Council,
P.O. Box 138,
INVERELL
NSW 2360

Attention: Chris Faley: 0438 261 285 : Email: chris.faley@inverell.nsw.gov.au

Dear Sir,

Flood Effects Report

Re : Determination of 1 in 100 Year Flood Height in Spring Creek Relating to Sapphire City Lifestyle Village at 31 Brownleigh Vale Drive Inverell

Preamble

The Zone Planning Group has lodged a DA for the development of Sapphire City Lifestyle Village at 31 Brownleigh Vale Drive Inverell which involves the construction of a manufactured homes estate.

The site is along the left bank of Spring Creek at Inverell. The layout is attached as Appendices A and B to this report.

Because the land is within 40 metres of the left bank of the creek in some locations, Clause 6 of the Local Government (Manufactered Homes) Regulation 2005 requires that Inverell Shire Council considers flood liable land provisions.

I have prepared from the records held of flooding in Spring Creek, a map detailing the flood height of the flood of 26th February 1976, which is largest flood in Spring Creek since the Second World War and probably since the 1920s. This map I have attached as Appendix A.

In addition, I have an enlarged plan of the estate layout attached as Appendix B, which shows a clearance line drawn 40 metres back from the left bank of the creek.

Both maps show the 1 in 100 year flood level in Spring Creek beside the estate.

Spring Creek

Spring Creek (commonly known as Black Gully) joins the Macintyre River just upstream of the Ross Hill Bridge on the left bank and drains an area south-west of Inverell from Warialda Road across to Leviathan Road being an area of 18 km2. Most floods down Spring Creek peak long before major flows occur in the river.

Also, the former Soil Conservation Service established in the late 1940s (within the Spring Creek catchment) recorded very high intensity rainfall on 26th February 1976 and 7th February 1991.

Harland Street in Inverell was extended in 1974 to join Auburn Vale Rd to Wynne Street at South

Inverell and a large 2 cell box culvert (two 3.35 m wide by 2.65 m high cells) was constructed over Spring Creek. A flood gauge upstream of the Harland Street culvert was erected about 1983 although marks recording the 1971, 1972 and 1976 flood levels were related to the new gauge. The former Water Resources Commission prepared a rating graph for the Harland Street crossing, and the 3 largest listed flood heights below have the flows recorded in brackets after the flood height

Historical information about the 1955 flood indicated that Spring Creek was in high flood when the river peaked which contributed to the height of the 1955 flood in the CBD. Since the Harland Street gauge was established with a road level 3.1 metres on the flood gauge, we have the largest flood of 3.80 metres (140 m3/s) on 26th February 1976, 3.30 metres (72 m3/s) on 7th February 1991, 2.96 metres (60 m3/s) on 3rd May 1983. The flood of 26th February 1976 caused the O'Connor Street bridge over the Macintyre River to be inundated even though there was no water in the river upstream of the Spring Gully junction at that time.

1920 to 1945 were very dry years and there were very few floods according to the records. From 1945 onwards the years were much wetter and there were many more floods. There are good records from 1955 onwards.

I located one resident, Trevor Purcell, who has lived at 2 Hindmarsh Street since 1967. He said there were only 2 floods which came to the end of the bitumen at the end of Hindmarsh Street in his time there. They were the floods of 26th February 1976 and 7th February 1991.

There is good evidence that the flood of 26th February 1976 is the 1 in 100 year flood in Spring Creek.

Recommendations

Appendix B shows some of the houses numbered on the southern estate boundary near the creek bank.

1. Houses 1 to 6 are within 40 metres of the left bank of the creek. It would be sensible to eliminate these house sites, because of their proximity to the creek bank.
2. Some of the car parking adjacent to houses 11 and 12 are within 40 metres of the creek bank but they probably could remain. Perhaps the sites of houses 1 to 6 could be used as car parking as well.
3. Perhaps 2 house sites could be created on the south-east side of houses 9 and 10.
4. The development is unlikely to divert flood flows elsewhere.
5. Good evacuation routes are available via Brownleigh Vale Drive and Wesley Street with the ground level rising steadily in a north-west direction.
6. I don't believe that the development will affect the environment or cause erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
7. It would be sensible to keep the house floor levels well above the 1 metre clearance required in the Inverell Shire Council's Development Control Plan.

Conclusion

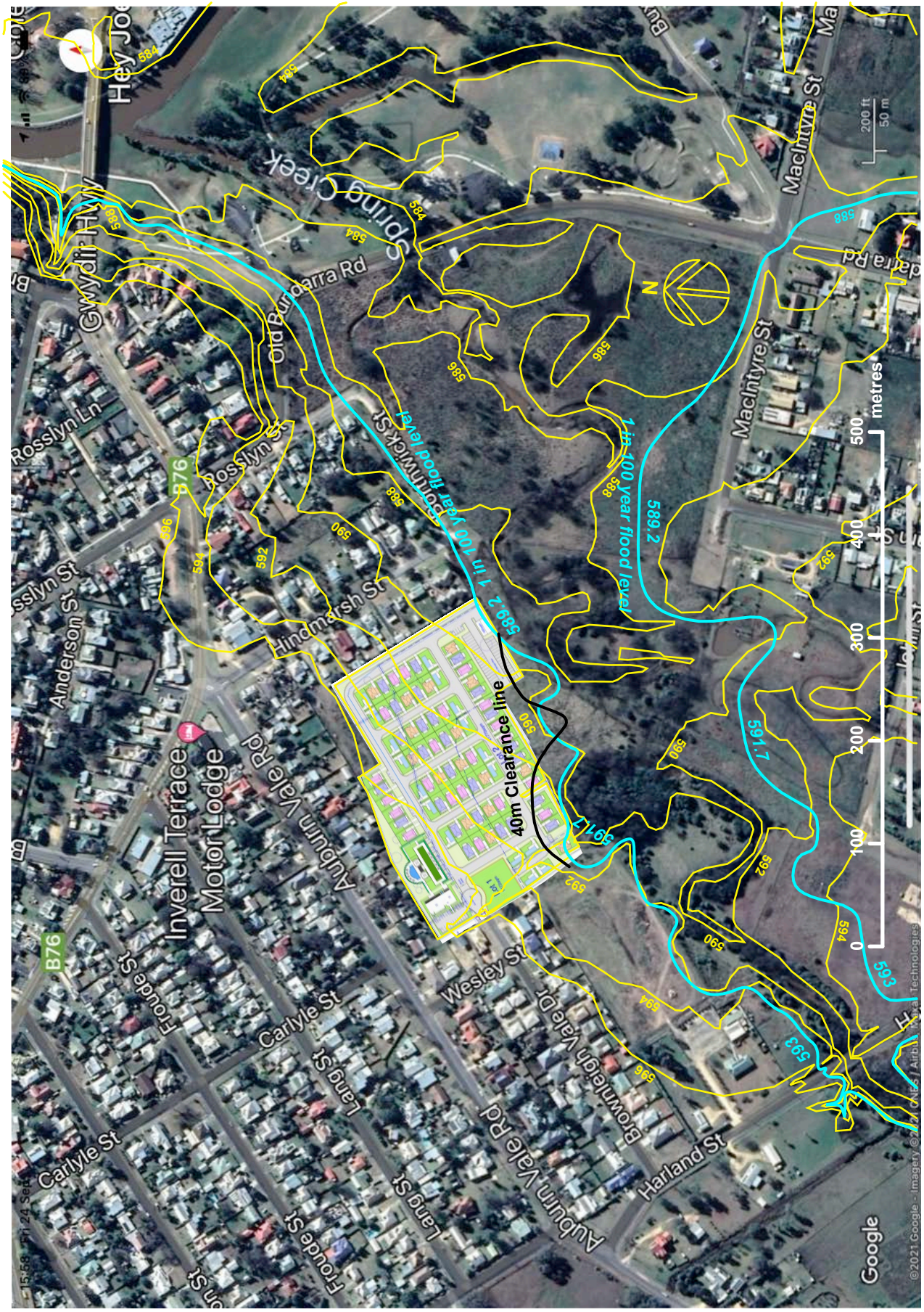
If you have any queries, please do not hesitate to contact the undersigned.

Yours faithfully,

David C. Jones
Chartered Professional Engineer
for and on behalf of David C. Jones (Consulting Engineers) Pty Ltd ABN 65 001 816 039

2021094366: D.C. Jones: 26th September 2021: 1 in 100 Year Flood Height in Spring Ck at Sapphire City Lifestyle Village Inverell cont

Appendix A



SPRING CREEK CATCHMENT IN VICINITY OF SAPPHIRE CITY LIFESTYLE VILLAGE

2021094366: D.C. Jones: 26th September 2021: 1 in 100 Year Flood Height in Spring Ck at Sapphire City Lifestyle Village Inverell cont

Appendix B

LAYOUT OF SAPPHIRE CITY LIFESTYLE VILLAGE WITH CERTAIN HOUSES NUMBERED

David C. Jones (Consulting Engineers) Pty Ltd
ACN 001 816 039 ABN/GST No. 65 001 816 039
51 Lewin Street, Inverell, NSW, Australia, 2360
Telephone (02) 6721 0222 International +61 2 6721 0222
Facsimile (02) 6721 0111 International +61 2 6721 0111
Mobile 0427 210222 International +61 427 210222
E mail: david@dcjones.com
David C. Jones: BE, MEngSc, FIEAust, Chartered Professional Engineer No 384884, NPER Civil and Structural
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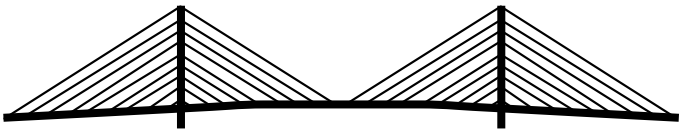
David C. Jones
Consulting Civil and Structural Engineers



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14th May 2022
2022054424 is Our Reference

General Manager,
Inverell Shire Council,
P.O. Box 138,
INVERELL
NSW 2360

Attention: Chris Faley: 0438 261 285: Email: chris.faley@inverell.nsw.gov.au

Dear Sir,

Flood Effects Addendum for Sapphire City Lifestyle Village at 31 Brownleigh Vale Drive Inverell

I have examined the revised layout plan of dwellings shown on sheet A1-CA-4 dated May 2022 which includes the 40 metre Clearance Line and the 1 in 100 year flood line which I provided in my Flood Effects Report dated 27th September 2021.

The revised layout meets the minimum requirements of the Inverell Shire Council's Development Control Plan (hereafter IDCP 2013 Part 6). IDCP 2013 Part 6 requires that floor levels in dwellings must be at least 1 metre above the Designated Flood (1 in 100 year flood).

Any dwellings located on ground where the floor level is not at least 1 metre above the 1 in 100 year flood, must be elevated to meet this requirement. As the dwellings are framed dwellings with timber floors, they can be constructed over steel posts set into concrete piers below ground.

Because the housing is aimed at older citizens, ramps rather than stairs should be provided although this is not a requirement of IDCP 2013 Part 6. Because the internal roads slope uphill towards the north-west, this will facilitate evacuation of the dwellings closer to Spring Creek in the event of the large flood.

This Addendum confirms that alterations to meet the minimum requirements of IDCP 2013 Part 6 have been complied with in the revised layout plan.

Yours faithfully,

David C. Jones
Chartered Professional Engineer
for and on behalf of David C. Jones (Consulting Engineers) Pty Ltd ABN 65 001 816 039