Queensland Reconstruction Authority

Commission of Inquiry

CROWN LAW–(QRA –
Brendan Nelson)
Response to Req. Ref#1751323
Attach BJN-33– BJN-43
File 539877/1 Volume 2 of 3 ORIGINAL

Second Supplementary Statement from Mr Brendan Nelson, General Manager Land Use Planning

Attachments BJN-33 to BJN-43

QFCI
Date: 8/11/11 JM
Exhibit Number: 926

QUEENSLAND FLOODS
COMMISSION OF INQUIRY

SECOND SUPPLEMENTARY
STATEMENT OF BRENDAN JOHN NELSON

I, **BRENDAN JOHN NELSON** of c/- Level 9, 119 Charlotte Street, Brisbane in the State of Queensland solemnly and sincerely affirm and declare:

302. I am the General Manager, Land Use Planning in the Queensland Reconstruction Authority. Prior to commencing this role in January 2011, I was the Executive Director, Planning Services in the Office of Growth Management Queensland, in the former Department of Infrastructure and Planning where I was responsible for delivering on both regional and statutory planning for Queensland, planning reform implementation and the delivery of Smart eDA, the State Government's commitment to electronic development assessment.

303. I have been a private consultant, worked internationally and have held various planning positions with Queensland local governments during almost 18 years in planning. I hold a Bachelor of Environmental Science (Griffith) and Graduate Diploma of Urban and Regional Planning (with Distinction) from QUT. I am a Corporate Member and Certified Practicing Planner with the Planning Institute of Australia.

Requirement from Queensland Floods Commission of Inquiry

304. I have seen a copy of a letter dated 14 October 2011, which is attachment BJN-33, from the Commissioner, Queensland Floods Commission of Inquiry to me requiring a written statement under oath or affirmation, and which details the topics my statement should cover.

305. This second supplementary statement should be read in conjunction with my original statement to the Commission dated 15 September 2011 and my supplementary statement to the Commission dated 21 October 2011.

Item 1 - What instructions were given to the Department of Environment and Resource Management by Mr Nelson (or anyone else at the Queensland Reconstruction Authority) regarding the interim floodplain mapping

306. The Queensland Reconstruction Authority (the Authority) first made contact with the Department of Environment and Resource Management (DERM) in late May 2011 seeking advice as to whether a state wide layer of flood mapping was available and if not, whether a state wide layer of flood mapping could be developed. DERM officers advised the Authority at this time that an existing state wide layer of flood mapping was not available.

307. In early June 2011, a number of follow up meetings were held between the Authority and DERM to determine the feasibility and techniques that could be developed to create a state wide floodplain map.

308. On 14 June 2011, I organised a workshop with Banana Shire Council in Biloela to discuss the floodplain management project. Further details on this workshop and other interactions with Banana Shire Council are detailed in Item 6 below, commencing from paragraph 333.

309. A further meeting was held on 15 June 2011 between myself and [redacted] General Manager, Spatial Services, DERM and our respective staff to discuss the project, methodology and likely product specifications that could be utilised in developing a statewide floodplain map. At this meting I was able to outline the product specifications that would be necessary to support Banana Shire Council, following on from the workshop on 14 June 2011.

310. As part of this meeting on 15 June 2011, it was agreed that the Dawson River sub basin in the Fitzroy River Basin would be selected as a pilot area to test the project methodology.

311. A draft Project Specification was also developed as a follow up to this meeting and further meetings were held between DERM and the Authority on 23 June 2011, 27 June 2011, 30 June 2011 and 4 July 2011 to review progress on the Dawson River sub basin pilot. On 14 July 2011, I agreed to the draft product specification for the purpose of allowing DERM to commence mapping of other sub basins, noting that some minor cartographic amendments and adjustments were made to the mapbook template and the mapping specification following the workshop with Banana Shire Council on 20 July 2011 and as a result, the final project specification was agreed between DERM and the Authority on 21 July 2011 and production commenced on the other sub basins on 22 July 2011.

312. A copy of this Product Specification is included as attachment BJN-34.

313. By way of summary, the project specification outlined that DERM would utilise the best available state wide data sets including, drainage location information, standard drainage classification system, contour information, satellite imagery (typically Landsat 5), historical flooding data, pre-clear vegetation mapping. It is important to note that a manual interpretation process was utilised in the development of the Interim Floodplain Assessment Area (IFAO) as the available data sets did not satisfactorily allow the process to be automated.

Item 2 - How, and by whom, it was decided what to show on the Queensland Reconstruction Authority ('QRA') map

314. As outlined above, I met with and agreed with DERM what was to be shown on the IFAO maps having regard to the available data sets. This information was detailed in the Project Specification included at attachment BJN-34. It was agreed with DERM at this time that the IFAO dataset would be owned by the Authority and that the mapping would be produced by DERM on behalf of the Authority utilising the extensive experience and technical skills of the DERM team, the majority of whom have more than thirty years cartographic experience.

315. Given that the product was designed to be potentially utilised as a regulatory tool in existing planning schemes, I specified that the mapping was to be cadastrally based with a scale of at

least 1:50,000 and must be set as an interim allowing Council to verify based on best available local information.

316. It was agreed with DERM that the mapping products would be produced to include an overview map of the sub basin, a digital layer which was the floodplain area and an A3 size mapbook depicting the floodplain area with an imagery backdrop and the digital cadastral map base at a scale of 1:50,000.

317. Following the Banana Shire Council workshop on 20 July 2011, some minor cartographic amendments and adjustments were made to the mapbook template and the mapping specification was agreed between DERM and the Authority on 21 July 2011 and production commenced on the other sub basins on 22 July 2011.

Item 3 - Details of other options for what might be shown on the map (including, for example highest historical flood, design flood (in terms of AEP), areas of flood risk, one of the above with freeboard etc) and reasons why those other options were not taken up

318. The data sets relied upon in the preparation of the IFAO mapping had the following overall principles:

a) suitability for a state wide approach
b) a consistent approach
c) repeatable if more accurate data is available in the future
d) evidential and justifiable

319. Using these principles, highest historical flood data was utilised. Specifically, gauging station data has been relied upon as one of the data sets in each sub basin. The location of gauging stations is shown on the index page of each hard copy mapbook (referenced by a red star and gauging station reference number). The gauging station reference number was utilised by the DERM mapping staff in determining the highest recorded levels and the cross section distances to the right and left banks at each location.

320. There is no state wide data set of design flood events (in terms of AEP) or areas of flood risk. Some of this information is available within individual local governments, but it is not always readily visible or available externally in a consistent manner.

321. As outlined on page 16 of attachment BJN-10 at exhibit 538, "the floodplain maps have been developed using the best data available state wide to the Authority. More detailed data, information, local knowledge and records may be readily available to local governments. Accordingly, while Council's can choose to adopt the Floodplain Maps in their current form, the Authority strongly encourages local governments to consider the Floodplain Maps and ascertain whether they identify all of the areas within the local government area that are potentially subject to flooding."

322. The inclusion of design flood events (in terms of AEP) or areas of flood risk were always intended to considered by local governments as part of the local verification process where that

information is available. Further details on how design flood events (in terms of AEP) may be incorporated into the IFAO as part of the local verification process is outlined Item 10 below.

Item 4 - How, and by whom, it was decided which areas were priorities to map quickly

323. For the first phase of the mapping, the Authority determined the priority areas based on an initial review of local government planning schemes to identify those local governments where planning schemes do not appropriately reflect State Planning Policy 1/03 (SPP1/03) (flood) or where there is no current Natural Hazard Management Area (NHMA) mapping for floods.

324. The Authority compiled a list of 27 sub basins that contained these priority planning scheme areas and forwarded it to DERM for completion as part of this first priority phase on 21 June 2011. The Authority requested DERM to complete phase one of this mapping by the end of July 2011 for release in conjunction with the draft Part 1 Guideline.

325. At the end of July 2011 (Phase 1), DERM had completed 24 of the 27 river sub basins and delivered these to the Authority.

326. The Authority then determined the Phase 2 mapping priorities based on the findings of the state wide review of the planning schemes and having regard to the population in each planning scheme area. Specifically, the state was divided into three sectors. These sectors were derived as follows:

- Sector A – population – < 4,000
- Sector B – population – 4,000 – 50,000
- Sector C – population – > 50,000

327. Included as attachment BJN-35 is the map which represents these areas, noting that Mount Isa is listed in Sector A but has a population equivalent to Sector B. The reason for showing Mount Isa in Sector A was to group areas for the purpose of setting mapping priority areas. It should be noted however that the Mount Isa Planning Scheme has been identified as appropriately reflecting SPP1/03.

328. Phase 2 of the mapping project included those remaining sub basins in the two highest priority areas (an additional total of 39 sub basins).

329. All remaining sub basins were included in phase 3. In total there are 129 river sub basins in Queensland.

330. As at 19 October 2011, DERM have provided to Authority mapping for Phase 2 totaling 63 sub-basins.

331. The Authority has always maintained that mapping for all relevant areas of the state will be completed by mid 2012. Based on current progress, it is likely that all relevant areas of the State will be mapped by late 2011 / early 2012. Phase 3 is currently estimated for conclusion in late December 2011 (total 116 sub basins). The balance number of sub-basins (13 of a total 128) are

not planned to be mapped as they represent areas which already contain extensive detailed mapping or they represent island communities.

Item 5 - Who was involved in writing the *Planning for stronger, more resilient floodplains guideline* (including specifying parts which were written by different people/departments)

332. The draft Part 1 Guideline was written by the Land Use Planning Team within the Authority. Input into the Guideline was also sought from state government departments, contractors and other publications where relevant. The following is a summary of the draft Part 1 Guideline by part including reference or involvement in addition to that of the Authority's Land Use Planning Team:

Section	**Contributors/ Source**
Information Boxes (throughout the document)	Courtesy of the Queensland Floods Science, Engineering and Technology Panel – Understanding Floods – Question and Answers.
1 – Understanding	
Overview of Events	Adapted from the State Plan – Operation Queenslander, Queensland Reconstruction Authority
Flooding and Floodplains	Floodplain Management in Australia , Best Practice Principles and Guidelines, SCARM Report 73, CSIRO Publishing
Understanding the River Systems	Bureau of Meteorology
2 – Analysis	
Page 9	Floodplain Management in Australia, Best Practice Principles and Guidelines, SCARM Report 73, CSIRO Publishing
Pages 10 & 11 – Mapping dataset breakdown	Spatial Information Team, Department of Environment and Resource Management
3 – Implementation	
New Construction Standards	Building Codes Queensland, Department of Local Government and Planning
Temporary State Planning Policy	Extracted from the TSPP which was authored by the Authority, DLGP and with support from lawyers, HWL Ebsworth
4 – Delivery	
Process	Authority and Planning Services Division, Department of Local Government and Planning

Schedule 1	
Model Code Provisions	PSA Consultants
	HWL Ebsworth Lawyers
	Planning Services Division, Department of Local Government and Planning
	Building Codes of Queensland, Department of Local Government and Planning
	Local Government Association of Queensland
	LS Future Proof – Lou Scarpato (for Balonne Shire Council)
	Insite Strategies – David Newby (for Banana Shire Council)

Item 6 - Details of work done with Banana Shire Council in developing interim floodplain maps and guideline

333. Extensive flooding occurred across the Banana Shire Council area during summer 2010/2011 with a highest recorded flood being recorded in Theodore. Theodore was the first town to be fully evacuated on 28 December 2010.

334. On 6 April 2011, I attended the Banana Shire Council in Biloela with [redacted] Director, Land Use Planning and [redacted] Director, Communications, both from the Authority. At this meeting I presented an overview of the role and responsibilities of the Authority to the full Council. I also provided a general overview of the functions and projects of the Land Use Planning Team, of which, one such project related to Floodplain Management. A copy of the presentation I gave to the Council is included at attachment BJN-36.

335. Immediately following the presentation that I gave to full Council on 6 April 2011, I met with senior engineering and planning staff from the Banana Shire Council to ascertain how the Authority may assist Council with respect to floodplain management or other land use planning matters. At this meeting, Council officers outlined that a flood study was about to be commissioned and that Council were in an advanced state of preparation of their new *Sustainable Planning Act 2009* (SPA) Planning Scheme.

336. The flood study that was about to be commissioned by Council was being funded through the Natural Disaster Resilience Program (NDRP). The NDRP is a four year disaster mitigation and community resilience competitive grant program and is funded through shared contributions of the Australian Government, the Queensland Government, and eligible applicants. I understand that approximately $200,000 had been approved from NDRP in 2010 to fund this flood study.

337. At this meeting, I identified an immediate opportunity to work with Banana Shire Council as a pilot Council to demonstrate how a flood study could be aligned at a sub basin level into a new SPA Planning Scheme. I also offered any necessary assistance to Council in coordinating the NDRP flood study and SPA Planning Scheme preparation process.

338. Following this meeting, I organised a workshop to be held in Biloela at Banana Shire Council for Council staff, state agency representations and other relevant persons on 14 June 2011. A copy of the presentation I gave to the workshop is included at attachment BJN-37. A copy of the minutes from this meeting are also included at attachment BJN-38.

339. As a follow up to the workshop on 14 June 2011, I arranged a further workshop on 20 July 2011 to present preliminary workshop deliverables and action items identified at the 14 June 2011 workshop. A copy of the presentation I gave to this workshop is included at attachment BJN-39.

340. At this workshop on 20 July 2011, I provided Council with a copy of the draft IFAO maps for the Dawson River sub basin.

341. Council's senior eng*ineering and planning officers at this workshop advised that the mapping was extremely beneficial and apart from a couple of small locations was generally in accordance with their local knowledge and expectations for a floodplain in the Dawson River sub basin.

342. At the workshop on 20 July 2011, significant discussion ensued on the draft model code. As a consequence of that workshop, the Authority reworked the draft model code. A copy of the draft model code presented to the workshop on 20 July 2011 is included as attachment BJN-40. A copy of the final draft Model Code including the items discussed at the workshop on 20 July 2011 is included in Appendix 1 of attachment BJN-10 at exhibit 538.

343. Following the Banana Shire Council workshop on 20 July 2011, some minor cartographic amendments and adjustments were made to the mapbook template and the mapping specification was agreed between DERM and the Authority on 21 July 2011 and production commenced on the other sub basins on 22 July 2011.

Item 7 - How, by whom, and why, it was decided to offer the interim floodplain area maps to local councils for the purpose of incorporating them into local planning schemes

344. In recognition of the time and cost involved in the preparation of detailed flood mapping and studies by Councils, the Authority, with the support of DERM, commenced a project to establish interim mapping of all of Queensland's floodplains to support Councils' existing planning schemes.

345. This approach for mapping of Queensland's floodplains is very similar to the default state wide mechanism for Bushfire mapping which has been very successful in aiding local governments to appropriately reflect the relevant provisions of SPP1/03 (Bushfire) in their planning schemes. At attachment BJN-13 (page 9) in exhibit 538, it is noted that many of the reviewed planning schemes were identified to appropriately reflect either or both the bushfire and landslide components of SPP1/03 without appropriately reflecting the flooding component. In this regard, 90 of the 124 planning schemes (73%) have been identified as appropriately reflecting either the bushfire / landslide component of SPP1/03. The remaining 34 (27%) planning schemes were identified as not formally appropriately reflecting any component (bushfire, landslide or flood) of SPP1/03.

346. The implementation of the guideline will principally focus on local governments in regional Queensland who may require assistance with integrating floodplain management into their existing planning schemes. Not all local governments will benefit from the draft Part 1 Guideline. It is a fit for purpose and voluntary solution, intended as an interim measure for inclusion in existing planning schemes particularly in circumstances where there is no (or limited) flood mapping.

347. The Authority determined that the IFAO maps would be offered to local governments as an interim solution to support floodplain management in existing planning schemes. This decision was made based on the findings of the review of existing Planning Schemes outlined in attachment BJN-13 of exhibit 538. The decision was also based on the likely timeframes associated with the finalisation of SPA Planning Schemes across the state, the majority of which will not be finalised until 2013 or later.

Item 8 - How the QRA expects local councils to take into account the local information before adopting the interim floodplain map as discussed on page 16 of the *Planning for stronger, more resilient floodplains* guideline

348. The Authority will provide all local governments with a copy of the relevant floodplain maps for their local government area. The floodplain maps have been developed using the best available data in a consistent manner statewide. More detailed data, information, local knowledge and records may be readily available to local governments. Accordingly, while Councils can choose to adopt the floodplain maps in their current form, the Authority strongly encourages local governments to consider the IFAO maps and ascertain whether they identify all of the areas within the local government area that are potentially subject to flooding.

349. Councils can amend the IFAO maps prior to adopting into their planning scheme and can utilise mapping and existing flood studies previously undertaken in this refinement process. The Authority is aware that many Council's have access to flood studies or previously completed flood mapping that will assist in this refinement process.

350. By way of example, maps for Warwick and Stanthorpe are included at attachment BJN-41. These maps illustrate the extent of the IFAO produced by the Authority and DERM and current flood mapping held by Southern Downs Regional Council for these townships. The extent of the IFAO is shown as the brown line on these maps. The extent of the flooding and inundation line determined by the Southern Downs Regional Council is shown as the blue cross hatched area.

351. As part of the Council review process of the IFAO mapping outlined on page 16 of attachment BJN-10 of exhibit 538, Council would refine the IFAO maps utlilising the best available flood study and mapping information that it has available. Included at attachment BJN-42 are examples of the refinement process that Southern Downs Regional Council may undertake in reviewing the IFAO in the townships of Warwick and Stanthorpe. The refined line in these townships is shown as the red line in attachment BJN-42. The refinement process will be undertaken by Councils with support from the Authority and DERM as required.

352. During a number of recent Council visits undertaken by the Authority, it was identified that a number of flood studies have been commissioned by Councils as a result of the 2010/2011 flooding events. Whilst the majority of these studies have not been completed, the refinement of the IFAO maps utilsing this information will be beneficial, particularly around existing townships.

353. By way of further example, and as a result of a recent visit by the Authority, Central Highlands Regional Council has advised that they are proposing to refine the IFAO mapping by incorporating the best available local data. The process proposed by Central Highlands Regional Council is as follows:

a) Council obtains digital dataset of the IFAO from DERM;
b) Council inserts the IFAO as a dataset in Council's GIS software;
c) Council inserts existing flood study mapping as a dataset in Council's GIS software;
d) Council refines the mapping as a new GIS layer particularly in the areas where the IFAO overlaps with areas of more detailed mapping; and
e) Council identifies areas of more detailed mapping with a specific hatch providing identification that the area has been derived through a flood study.

354. The process outlined above by Central Highland Regional Council is consistent with the approach being recommended by the Authority and being undertaken by other Council's currently utilising the toolkit provided by the Authority. It is also consistent with the refinement examples outlined for Warwick and Stanthorpe included at attachments BJN-41 and BJN-42.

Item 9 - What information QRA has provided to local councils to assist in their understanding of the interim floodplain maps and model code provisions

355. The Authority has undertaken at least 48 briefings on this project to a number of forums including Councils with the view to raising awareness of the project and seeking feedback and submissions. As at 20 October 2011, the following 48 information sessions have been completed:

1) Banana Shire Council, Biloela (20 July 2011)
2) State Agency Briefing, Brisbane (21 July 2011)
3) North West Regional Planning Committee (Flinders, Richmond, McKinlay, Cloncurry and Mt Isa Councils), Hughenden (26 July 2011)
4) South West Regional Planning Committee (Murweh, Quilpie, Paroo, Bulloo), St George (28 July 2011)
5) Maranoa – Balonne Regional Planning Committee (Maranoa, Balonne Councils), St George (28 July 2011)
6) Emergency Response & Recovery Conference, Brisbane (28 July 2011)
7) National Flood Modelling Workshop, Canberra (29 July 2011)
8) DERM Executive Management Group (1 August 2011)
9) Central Queensland University Property Conference, Rockhampton (12 August 2011)
10) LGAQ Briefing, Brisbane (18 August 2011)
11) Queensland Design Council, Cairns (19 Aug 2011)
12) Far North Queensland Planning Symposium, Cairns (19 August 2011)
13) LGAQ Briefing, Brisbane (25 August 2011)

14) Natural Disaster Insurance Review Workshop, Sydney (26 August 2011)
15) SEQ Post Flood Science Review & Planning Forum, Brisbane (2 September 2011)
16) LGAQ Briefing, Brisbane (8 September2011)
17) Queensland Chief Scientist Briefing, Brisbane (9 September 2011)
18) Toowoomba Regional Council, Toowoomba (14 September 2011)
19) NEMC Land Use Planning and Building Code Taskforce Meeting, Canberra (16 September 2011)
20) Queensland Spatial Information Council (19 September 2011)
21) CSIRO Briefing, Brisbane (20 September 2011)
22) Inter-Departmental Committee – SPP1/03 Review, Brisbane (21 September 2011)
23) Planning Institute of Australia – Queensland State Conference, Toowoomba (22 September 2011)
24) International River Symposium, Brisbane (26 September 2011)
25) Urban Development Institute of Australia (Queensland Division), Brisbane (28 September 2011)
26) Somerset Regional Council, Brisbane (30 September 2011)
27) State Agencies Briefing, Brisbane (3 October 2011)
28) Engineers Australia, Water Panel, Brisbane (5 October 2011)
29) Central Highlands Regional Council, Emerald (7 October 2011)
30) Spatial Information Officers Conference, Brisbane (10 October 2011)
31) South Burnett Regional Council, Kingaroy (10 October 2011)
32) Southern Downs Regional Council, Warwick (11 October 2011)
33) Goondiwindi Regional Council, Goondiwindi (11 October 2011)
34) PSMA Australia Board Meeting, Canberra (11 October 2011)
35) North Burnett Regional Council, Gayndah (11 October 2011)
36) Gympie Regional Council, Gympie (11 October 2011)
37) ANZLIC Council Meeting, Canberra (12 October 2011)
38) Balonne Shire Council, St George (12 October 2011)
39) Paroo Shire Council, Cunnamulla (13 October 2011)
40) Murweh Shire Council, Charleville (13 October 2011)
41) Maranoa Regional Council, Roma (14 October 2011)
42) National Flood Risk Advisory Meeting, Brisbane (17 October 2011)
43) Gladstone Regional Council, Calliope (17 October 2011)
44) Banana Shire Council, Biloela (17 October 2011)
45) Rockhampton Regional Council, Rockhampton (18 October 2011)
46) Bundaberg Regional Council, Bundaberg (18 October 2011)
47) Somerset Regional Council, Esk (20 October 2011)
48) State of the Commonwealth Cities Symposium, Brisbane (20 October 2011)

356. An example presentation specifically provided to Councils is included as attachment BJN-43.

357. In addition to the 48 briefings already completed for this project, the Authority will continue to undertake briefings to Councils as sub basin mapping is completed in each local government area. The current schedule for a further 20 Council visits is as detailed below:

1) Fraser Coast Regional Council (31 October 2011)
2) Mackay Regional Council (31 October 2011)
3) Whitsunday Regional Council (31 October 2011)

4) Charters Towers Regional Council (1 November 2011)
5) Burdekin Shire Council (1 November 2011)
6) Tablelands Regional Council (2 November 2011)
7) Townsville City Council (2 November 2011)
8) Hinchinbrook Shire Council (2 November 2011)
9) Cassowary Coast Regional Council (3 November 2011)
10) Shire of Yarrabah (3 November 2011)
11) Cairns Regional Council (3 November 2011)
12) Shire of Wujal Wujal (4 November 2011)
13) Blackall-Tambo Regional Council (6 November 2011)
14) Barcaldine Regional Council (6 November 2011)
15) Longreach Regional Council (7 November 2011)
16) Isaac Regional Council (8 November 2011)
17) Central Highlands Regional Council (8 November 2011)
18) Scenic Rim Regional Council (date to be confirmed)
19) Lockyer Valley Regional Council (date to be confirmed)
20) Sunshine Coast Regional Council (date to be confirmed)

358. The Authority has also offered to assist any Council that may wish to utilise the toolkit and/or refine any mapping.

359. As at 20 October 2011, the following Councils have been briefed and the table below summarises the comments received from Councils outlining the Authority's understanding of how each Council may utilise the toolkit.

Council	**Number of existing IPA Planning Schemes**	**Comment**
Central Highlands Regional	4	Reviewing the mapping and model code. Mapping will be reviewed specifically with detailed information that exists for townships such as Emerald. The mapping will represent a combination of the IFAO and local mapping. Council will pursue a minor scheme amendment process for all schemes.
South Burnett Regional	4	Reviewing the mapping and model code. Council will pursue a minor scheme amendment process for all schemes.
Southern Downs Regional	2	Reviewing the mapping and model code. Council will pursue a minor scheme amendment process for all schemes. The IFAO mapping will also be used in the review of

		the new SPA Scheme which has undergone public consultation.
North Burnett Regional	6	Reviewing the mapping and model code. Council will pursue a minor scheme amendment process for all schemes.
Goondiwindi Regional	3	Reviewing the mapping and model code. Council will consider a minor scheme amendment process for the existing planning schemes. The existing levee will need to be taken into consideration in regards to developing flood levels for new buildings and determining the extent of the IFAO area.
Balonne Shire	1	Reviewing the mapping and model code. Council will pursue a minor scheme amendment process for the existing planning scheme. Will utilise the mapping as part of the development of the new planning scheme which is currently being prepared. The existing levee will need to be taken into consideration in regards to developing flood levels for new buildings.
Gympie Regional	3	Council has progressed its new planning scheme with a draft pending completion of detailed flood study. Gympie has extensive mapping particularly in its major township of Gympie. The IFAO mapping will be reviewed and utilised in the new scheme to present a holistic picture across the entire local government area, particularly in areas such as the former Kilivan Shire where no mapping currently exists nor is planned for completion.
Paroo Shire	1	Paroo River sub-basin is not yet complete however Warrego River which covers majority of the Shire's population has been completed and mapped. The

		Authority will provide resources to Council to support the local verification of the mapping and provide guidance for a minor scheme amendment process.
Murweh Shire	1	Council has detailed mapping for Charleville. The IFAO mapping will provide a holistic picture for the entire local government area. Council will also review the Model Code and amend their existing provisions where appropriate.
Maranoa Regional	5	Reviewing the mapping and model code. Council may pursue a minor scheme amendment process for all schemes, subject to review of the IFAO mapping to incorporate flood studies commissioned by Council.
Somerset Regional	2	Somerset are working with the Authority in the adoption of a minor scheme amendment to both the existing Esk and Kilcoy planning schemes.
Gladstone Regional	3	Reviewing the mapping and model code. Council is likely to pursue a minor scheme amendment process for all schemes.
Banana Shire	2	Reviewing the mapping and model code. Council will pursue a minor scheme amendment process for both schemes.
Rockhampton Regional	4	Reviewing the mapping and model code. Council is likely to pursue a minor scheme amendment process for the Fitzroy, Livingstone and Mount Morgan schemes.
Bundaberg Regional	4	Bundaberg has extensive mapping in the Bundaberg planning scheme and partly in the Burnett planning scheme. No mapping currently exists for Kolan and Isis. The IFAO mapping will be reviewed and utilised in the new scheme to present holistic picture across the entire LGA.

360. Utilising the toolkit provided by the Authority, and based on the extensive consultation being undertaken by the Authority, I expect the number of existing IPA Planning Schemes appropriately reflecting SPP1/03 (flood) to increase significantly prior to mid 2012 using the mechanisms provided under the Temporary State Planning Policy 2/11 (TSPP).

Item 10 - What is expected to be done by local councils or the QRA or both in partnership before a mapping product that is ready to be incorporated into local planning schemes is available

361. The draft Part 1 Guideline outlines the process by which a Council may choose to adopt elements of the toolkit including the IFAO mapping and model code provisions as a new section "Interim Floodplain Assessment Overlay" within their existing planning scheme.

362. A planning scheme amendment process would normally take at least 6 months including public consultation and state agency review periods. The streamlined process being facilitated by the Authority and the DLGP to adopt the toolkit as a minor change to the planning scheme may be undertaken in as little as a few weeks given that the Authority is undertaking the public consultation and state agency review on behalf of Council's.

363. Statutory Guideline 02/09 – Making and amending local planning instruments (SG02/09) is included at attachment BJN-26 of my Supplementary Statement to the Commission dated 21 October 2011. SG02/09 outlines the process to be followed for a minor planning scheme amendment. Specifically, on page 8 of SG02/09, it is noted that a minor amendment to a planning scheme is an amendment that the "Minister is satisfied: (b) reflects a state planning policy, or part of a state planning policy", noting that consultation has been undertaken on the draft Part 1 Guidelines by the Authority.

364. The following 6 steps outlines the streamlined process by which a Council can review, resolve and adopt the toolkit if they choose to do so.

Step 1: Council obtains toolkit including:

a) Guideline
b) Model Code
c) Mapping
    i. Hard copy mapbook
    ii. Digital copy mapbook
    iii. Digital datasets

Step 2: Council commences review process including the mapping product and the planning scheme provisions.

a) In reviewing the mapping, Councils are encouraged to utilise existing flood studies, records, photographs and local knowledge to visually inspect and ground truth the IFAO.
b) Authority officers to visit the Council and assist as required.

Step 3: Council resolves to undertake a minor scheme amendment to either:

a) Adopt mapping and Model Code as provided by the Authority unchanged; or
b) Adopt Model Code as provided by the Authority and adopt locally amended mapping; or
c) Adopt mapping as provided by the Authority and adopt amended Model Code; or
d) Adopt locally amended mapping and amended Model Code.

Councils can choose to adopt either of the options or a combination of the above to all planning schemes applicable in their jurisdiction.

During the amendment process to either the mapping / code provisions, the Authority can assist particularly the low-growth Councils in making any refinements.

Where amendments are proposed either under b), c) or d), Council should outline the basis for the amendments (ie. based on a localised flood study).

Step 3a: In addition to a) – d) above, a Council may choose to adopt the mapping as a NHMA (Flood) as provided under the TSPP.

In designating this area as a NHMA (Flood), the identified area can also be used in the assessment of building work under the *Standard Building Regulation 1993*.

In addition to the nomination of NHMA (Flood), a Council can also choose to nominate flood levels in accordance with section 13 of the *Standard Building Regulation 1993*. In nominating a flood level, a Council may choose to rely on the highest recorded flood or other historical data. To support the nomination of a flood level and ultimately the proposed amendments to the Queensland Development Code, Councils will need to make a clear distinction between the flood level and the proposed nominated freeboard.

By way of example:

Assuming Town A has a highest recorded flood level of 19.5m AHD in 1956 and there are no current flood studies available for the township. Council may choose to adopt the highest recorded flood level as the level for the township plus a freeboard of 300mm resulting in the minimum habitable floor level of any new buildings being 19.8m AHD.

Adoption of a flood level will allow for a more streamlined adoption of the Queensland Development Code amendment provisions relating to construction of residential dwellings in flood liable land. Without the nomination of a flood level, an applicant for a building approval may need to engage a hydrologist to determine flood characteristics for the site. Therefore Councils are encouraged to adopt a flood level even if only on an interim basis until further flood studies are completed.

Step 4: Council forwards to DLGP a minor scheme amendment package/s for each of the planning schemes where amendments are proposed. If the amendment package is

proposed under option a) in Step 3 above, DLGP will consider the fast-tracking of the amendment as a minor scheme amendment.

If Council elects to proceed with option b), c) or d) from Step 3 above, DLGP will refer the amendment package to Authority for review.

The Authority will liaise with DERM and confirm any amendments or refinements to the mapping and update the state wide information with the proposed amendments.

The Authority will review any such amendments within 5 business days of receipt from DLGP.

DLGP will then provided to the Minister for consideration, the minor scheme amendment package within 10 business days from either receipt of a package provided under option a) or following confirmation from the Authority that the amendments are appropriate.

Step 5: Council incorporates approved scheme amendments into applicable planning schemes as new sections as either Overlay Code or Overlay Area depending on the format of the existing scheme.

Step 6: Assessment of any new applications triggered in the "Floodplain Overlay Area" against the Floodplain Code.

365. The Authority has offered to assist Councils in the refinement of the mapping product including the digital dataset amendments and the production of an overlay map suitable for inclusion in a planning scheme document.

366. The Authority will also provide Councils with templates that will assist in the adoption process including:

a) Suggested specific adoption process applicable to each of the planning schemes within the jurisdiction of the local government authority;
b) Council resolutions to support the progress of a minor scheme amendment;
c) Model Code in word version so that proposed changes can be tracked; and
d) Cover letter to DLGP for consideration of a minor scheme amendment.

Item 11 – What is the timetable for the activities described in number 10

367. The Authority will work with each Council who commits to using the toolkit in whatever capacity the local government requires.

368. The draft Part 1 Guideline is currently undergoing public consultation until 11 November 2011 and is expected to be finalised shortly thereafter following the review of any submissions made during the consultation period.

369. The TSPP commences on 14 November 2011 following the consultation period on the draft Part 1 Guideline.

370. Based on advice provided by Councils to date, the Authority expects a number of Councils to commence the streamlined adoption process from 14 November 2011 onwards. Timing for adoption of the toolkit will however be at the total discretion of the Council.

371. The Authority will work closely with DLGP including the regional offices to assist with any proposed amendments. The Authority intends to engage with every Council individually when IFAO mapping is available in the relevant local government area. This will ensure that Councils have a full understanding of the toolkit should they wish to proceed with any scheme amendments.

Item 12 - Involvement of the QRA with Building Codes Queensland regarding the draft standard for the construction of buildings in flood hazard areas in the Queensland Development Code

372. The Authority has not had any involvement in the drafting of the draft national standard nor the proposed amendments to the Queensland Development Code (QDC).

373. The mapping provided by the Authority as part of the toolkit provides a method by which the proposed amendments to the QDC can be triggered.

Item 13 - Whether the QRA interim floodplain maps appropriately complement the draft standard, and:

a. if so, how

b. if not, why not

374. Currently, local governments may, under section 13 of the *Standard Building Regulation 2006*, designate a natural hazard management area (flood) in a local planning instrument or by resolution as long as it is in accordance with SPP1/03. In addition, local governments may also declare a minimum height for habitable rooms. This provides building controls where local governments have sufficient flood mapping.

375. Further, the Building Code of Australia currently requires buildings to be able to withstand loads and actions they would reasonably be exposed to. However, the code currently provides no specific guidance on design for flooding related actions.

376. The draft new national flood standard is proposed to apply under the QDC and will bring in specific guidance on design for flooding relating actions. This will help achieve greater community flood resilience by providing more detailed design guidance for buildings in designated flood hazard areas. Building Codes Queensland in the Department of Local Government and Planning have proposed the adoption of a draft national standard for the construction of buildings in flood hazard areas in late November 2011. Implementation of the amendments to the QDC is reliant and only applicable where a local government has designated a Flood Hazard Area.

377. Therefore, to allow for the implementation and early adoption of the draft flood standard through the QDC, it is understood that Building Codes of Queensland is intending to amend section 13 of the *Standard Building Regulation 2006* to allow local governments to designate areas as flood hazard areas in accordance with the TSPP.

378. The TSPP provides the ability for local governments to designate areas using the Authority's IFAO mapping or amendments to the IFAO mapping following local verification.

379. Whilst a detailed approach is nominated at paragraph 364, the following provides an example Council resolution supporting both the adoption of the IFAO mapping in an existing planning scheme whilst also supporting the provisions of the proposed amendments to the QDC:

Example - Council Officer Recommendation

A. THAT Council proceed with a minor planning scheme amendment to X *Planning Scheme-Proposed Amendments 1 of 2011* to incorporate a new Part X – Floodplain Assessment Overlay Code that is generally in accordance with the Model Code as provided in the *Planning for stronger, more resilient floodplains guideline* – and new supporting Regulatory Map X.X – Floodplain Assessment Overlay.

B. THAT Council declares the designation of the Floodplain Assessment Overlay as a Natural Hazard Management Area (Flood) in accordance with Temporary State Planning Policy 2/11.

C. THAT Council adopts the Highest Recorded Flood from XXX as the Flood Level for the Townships of X and X.

D. THAT Council adopts a nominated freeboard of 300mm.

E. AND THAT Council authorise the Chief Executive Officer to finalise administrative matters relating to the finalisation and the adoption of the proposed minor amendments.

380. With the amendments to section 13 of the *Standard Building Regulation 2006* to allow local governments to designate areas as flood hazard areas in accordance with the TSPP, and following the process outlined in the draft Part 1 Guideline, I am of the view that the Authority's IFAO maps appropriately complement the proposed amendments to the QDC.

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

Signed . . . . . .

Taken and declared before me, at Brisbane this 21st day of October 2011

Solicitor/Barrister/Justice of the Peace/Commissioner for Declarations

Our ref: 1751095

14 October 2011

[redacted]
Deputy Crown Solicitor
GPO Box 5221
BRISBANE QLD 4001

Dear [redacted]

Requirement to Provide Statement returnable 21 October 2011

Please find enclosed a Requirement to Provide a Statement directed to Mr Brendan Nelson, General Manager, Planning, Queensland Reconstruction Authority.

The material is returnable to the Commission no later than 4 pm, Friday, 21 October 2011.

If you require further information or assistance, please contact [redacted] on telephone [redacted]

We thank you for your assistance.

Yours sincerely

[redacted]
Jane Moynihan
Executive Director

Encl.

400 George Street Brisbane
GPO Box 1738 Brisbane
Queensland 4001 Australia
Telephone **1300 309 634**
Facsimile **+61 7 3405 9750**
www.floodcommission.qld.gov.au
ABN 82 696 762 534

Our ref: Doc 1751323

14 October 2011

Mr Brendan Nelson
General Manager, Planning
Queensland Reconstruction Authority
PO Box 15428
CITY EAST QLD 4002

REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Mr Brendan Nelson, General Manager, Queensland Reconstruction Authority, to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Brendan Nelson gives an account of:

1. what instructions were given to the Department of Environment and Resource Management by Mr Nelson (or anyone else at the Queensland Reconstruction Authority) regarding the interim floodplain mapping
2. how, and by whom, it was decided what to show on the Queensland Reconstruction Authority ('QRA') map
3. details of other options for what might be shown on the map (including, for example highest historical flood, design flood (in terms of AEP), areas of flood risk, one of the above with freeboard etc) and reasons why those other options were not taken up
4. how, and by whom, it was decided which areas were priorities to map quickly
5. who was involved in writing the *Planning for stronger, more resilient floodplains* guideline (including specifying parts which were written by different people/departments)
6. details of work done with Banana Shire Council in developing interim floodplain maps and guideline
7. how, by whom, and why, it was decided to offer the interim floodplain area maps to local councils for the purpose of incorporating them into local planning schemes
8. how the QRA expects local councils to take into account local information before adopting the interim floodplain maps as discussed on page 16 of the *Planning for stronger, more resilient floodplains* guideline
9. what information QRA has provided to local councils to assist in their understanding of the interim floodplain maps and model code provisions
10. what is expected to be done by local councils or the QRA or both in partnership before a mapping product that is ready to be incorporated into local planning schemes is available

400 George Street Brisbane
GPO Box 1738 Brisbane
Queensland 4001 Australia
Telephone **1300 309 634**
Facsimile **+61 7 3405 9750**
www.floodcommission.qld.gov.au
ABN 82 696 762 534

11. what is the timetable for the activities described in number 10
12. the involvement of the QRA with Building Codes Queensland regarding the draft standard for the construction of buildings in flood hazard areas in the Queensland Development Code
13. whether the QRA interim floodplain maps appropriately complement the draft standard, and:
    a. if so, how
    b. if not, why not.

In addressing these matters, Brendan Nelson is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness of particular actions or decisions and the basis of that commentary or opinion.

Brendan Nelson may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by 4pm Friday 21 October 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing info@floodcommission.qld.gov.au.

C. Holmes

Commissioner
Justice C E Holmes

Product Specification -- Interim Floodplain Assessment Overlay

Purpose

This brief has been prepared by the Queensland Reconstruction Authority (QldRA) to define the background and specification for the *"Interim Floodplain Assessment Overlay" spatial* product(s) to be developed by the Department of Environment and Resource Management (DERM) on behalf of the QldRA.

Background - Overall Project

The QldRA continues to work on the flood plain management project where the proposed deliverables of this project are to:

- Undertake an audit of planning schemes for selected flood affected local governments – completed.
- Provide interim flood plain management controls for local governments not adequately protected - underway.
- Develop standard planning scheme provisions to enable consistency in application of flood plain management controls and regulation across Queensland - underway.
- Provide guidance and support for local government in the development of templates – on-going.

The QldRA has completed a desktop review of all planning schemes (124) in effect across the State. As a result, a series of guidelines – Planning for a stronger, more resilient flood plain is proposed to assist Councils in the adoption of both interim and long term protection provisions. The first guide will be targeted towards those Councils who based on the audit, do not seem to be adequately protected. The guide will provide assistance as to what interim provisions can be brought into their existing schemes whilst the new amalgamated planning scheme is prepared.

Banana Shire will be used as a case study to roll out the interim provisions, a flood study and the long term provisions in the new planning scheme. The Shire has been allocated funding through Department of Community Safety for the Flood Study.

The QldRA is working closely with DERM to prepare state-wide "*Interim Floodplain Assessment Overlay" maps* based on available historical data and that captured during the recent 2010 – 2011 flood events.

The QldRA is working closely with Building Codes Queensland to ensure that the templates are reflective of the requirements to support the proposed new National Flood Code currently under consideration from the Australian Building Code Board.

Background - Spatial Products.

The QldRA is developing an interim solution to support Local Government Authorities (LGAs) and requires spatial information product(s) to assist relevant LGAs take flooding issues into account when considering development applications. The intent is to provide relevant LGAs with an initial map showing where flooding issues may need to be considered, together with guidelines (developed by QldRA) for how to consider flooding

issues. This will not trigger additional assessable development. It will only provide an additional consideration for proposals which are assessable.

The aim is to provide those LGAs without flood mapping with an initial "*Interim Floodplain Assessment Overlay"* product. LGAs may choose to adopt this area or can amend this product using local knowledge and information to improve it, including additional products provided by the QldRA. As part of a longer term approach, LGAs may further undertake a risk assessment to identify areas for more detailed flood studies. The *Interim Floodplain Assessment Overlay* product will be a regulatory tool under the *Sustainable Planning Act 2009*.

Priorities / Staging

Stage 1: The attached schedule is based on LGAs with no current flood hazard mapping and sets out the priority by planning scheme for the preparation of the desired product.
Stage 2: -The situation and approach will be reviewed after stage 1 to determine the most appropriate product for elsewhere in the State.

Product

The QldRA requires by 30 July 2011, that for Stage 1 priority planning schemes a spatial data set be developed using the best available information which delineates the floodplain area appropriate to trigger consideration of flooding issues by Council.. The data set will be developed using the following principles: The process is,

- to be suitable for a statewide approach;
- to use a consistent approach;
- to be able to be repeated if more accurate data is available in the future;
- eevidential and justifiable.

The *Interim Floodplain Assessment Overlay* will be derived from overlaying available state-wide information sources, including:

- The best available drainage location information (typically 1:100,000 or 1:250,000)[1]
- A standard drainage classification system to determine similar orders of importance
- The best available contour information (typically 10 metre contours)[2]
- The best available satellite imagery (typically Landsat 5), as a standard base layer
- Where other datasets exist and can aid visual interpretation, the following will be used:
    - datasets which provide evidence of historical flooding.
        - Interpreted or actual flood information from 2010/2011 events
        - DERM gauging station information
    - Other data layers as available over the various drainage basins or river sub-basins to provide further informative information for visual interpretation:

[1] Positional accuracy of this data is typically 1mm at map scale (eg 100m +/- at 1:100,000 scale)

[2] Horizontal contour accuracy is typically +/- half a contour interval (relevant to gradient at any given location)

- Preclear Vegetation Mapping of Landzone 3 (Alluvium) and Landzone 1 Estuarine) and SALI Soil Flooding Limitation Mapping

The data set will be in a format suitable for provision to local authorities. To support local authorities to understand the provided dataset, DERM will make available the data sets used in the interpretation (subject to any licensing conditions under which the department acquired the data).

DERM also understands that the QldRA will require visualisations (eg. PDF's or paper products) of the dataset, overlaid on other data sets to support communication activities. These products will be agreed with QldRA. It is understood that these visualisations will include:

- Initially for the Dawson Valley, showing of cross section information related to the gauging station showing the location of the highest recorded flood.
- A DCDB layer to enable identification of individual parcels and relationship with the flood hazard area

The product will be used to identify individual properties or parts of properties located within a *Interim Floodplain Assessment Overlay area.*.

The intent is to have the product prepared for major sub-basins covered by the priority LGAs, based upon the experience from the Dawson Valley pilot study.

The products for Stage 1 will be

- A sub basin overview sheet
- A map book for each identified sub-basin
- Digital data sets used to compile the *Interim Floodplain Assessment Overlay* will be made available if required

Acknowledged Assumptions

The QldRA acknowledges that

- The Landsat5 imagery has not necessarily captured the extent of the peak flood from 2010 /2011 in respective river catchments
- Not all the river catchments in the priority list received significant flooding
- This is a desk top only exercise with no on-ground validation
- The product may not represent the highest recorded flood or maximum possible flood
- More detailed data will be available for many towns following the completion of the current Lidar program underway.
- LGAs will be encouraged to ground truth the limits of the Flood Hazard Area
- To provide a common and consistant approach across sub basins, more accurate project data, eg detailed contours, digital elevation data or aerial photography will not been used in this initial product due to meet the time constraints for this project.

Project Governance

The QldRA will sign off on the Dawson Valley pilot product and other options as presented by DERM to give the QldRA confidence in the product and methodology developed.

The QldRA is the client, the decision maker, and “owner” of the mapping product(s). DERM is the provider.

DERM will liaise with the QldRA to consider any new or additional data sets that are found and may be useful for the purpose of providing LGAs with relevant data upon which to consider flooding issues.

Custodianship

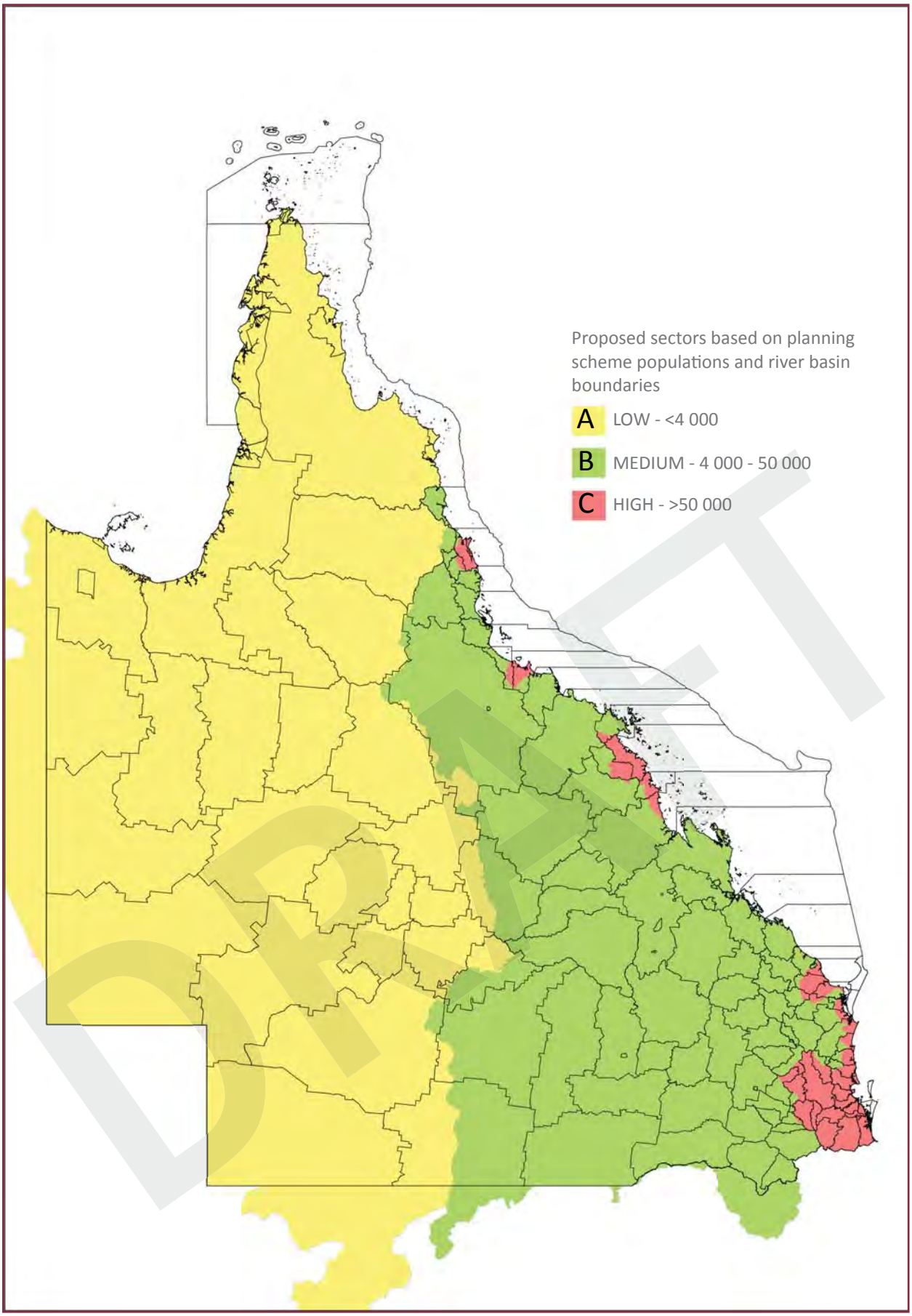
- Custodian ship of this product will reside with QldRA
- Maintenance responsibilities reside with the custodian. The Qld RA may engage DERM to provide update service to support Councils who require edits to respective product(s)

Project Risks

- There is no control over how the mapping product(s) will be used beyond the intended purpose of providing LGAs with a basis for considering flood issues in development applications.
- There may be unintended consequences for land valuations and insurance purposes, especially when the product(s) are not ground truthed and does not relate to a standard defined flood recurrence interval nor a defined flood line.
- Ideally these flood hazard area mapping products would be used to identify flood risk areas for which more detailed flood studies would be undertaken. This would provide greater certainty of exposure to flood risk on the ground and significantly reduce the risk of adverse unintended valuation and insurance consequences.

This can be mitigated by having the respective flood hazard areas related to the recent events and for this to be clearly communicated, the primary target being Regional Planning Committees as the coordinating mechanism for LGA planning. – The issue is that the recent events have not been completely captured across the state.

****



Map 4 - Sector Map

Queensland Reconstruction Authority

[redacted]

Pre[redacted]uncil

[redacted]

Brendan Nelson

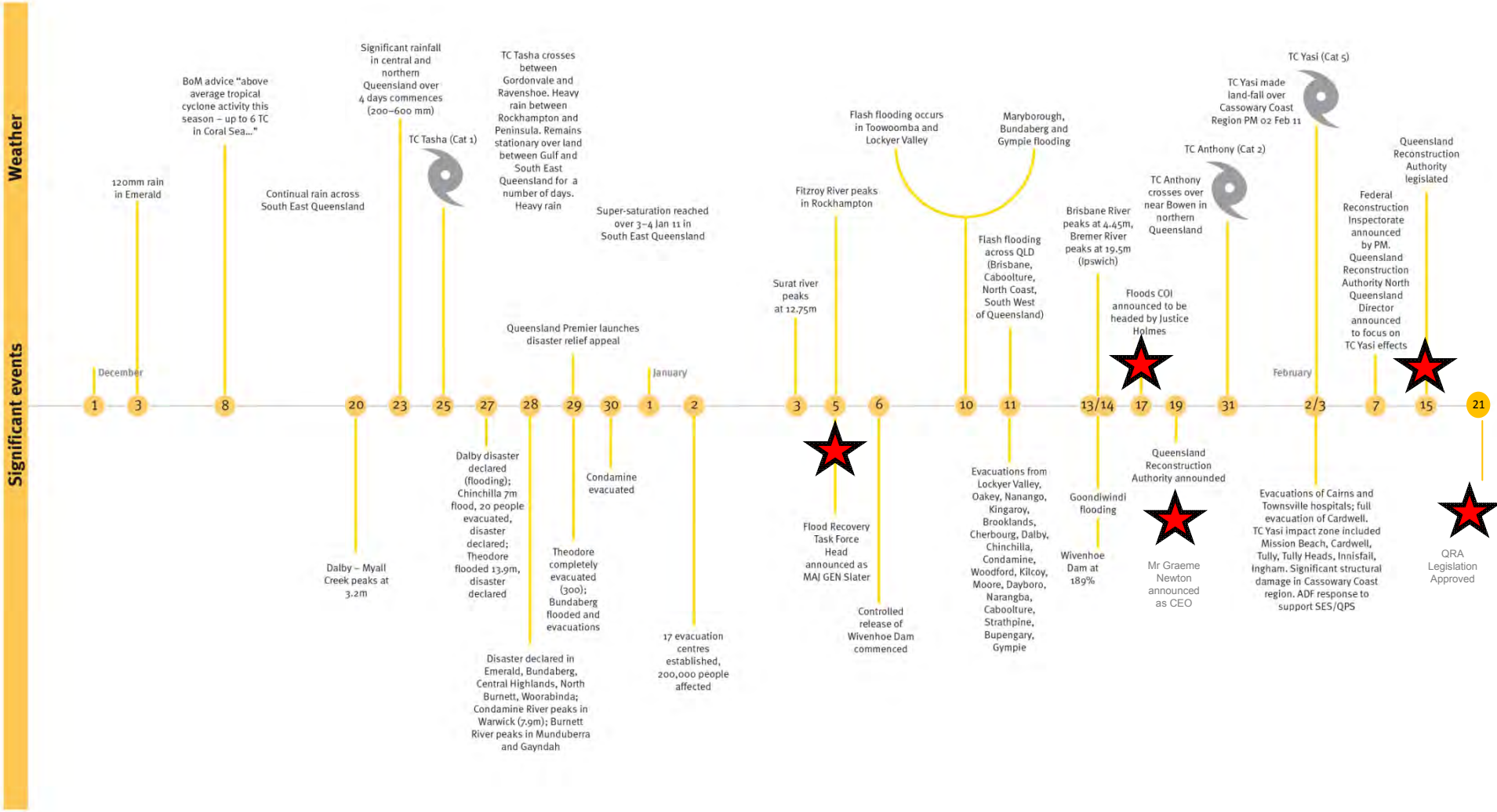
Ge[redacted]l Manager, Land Use Planning

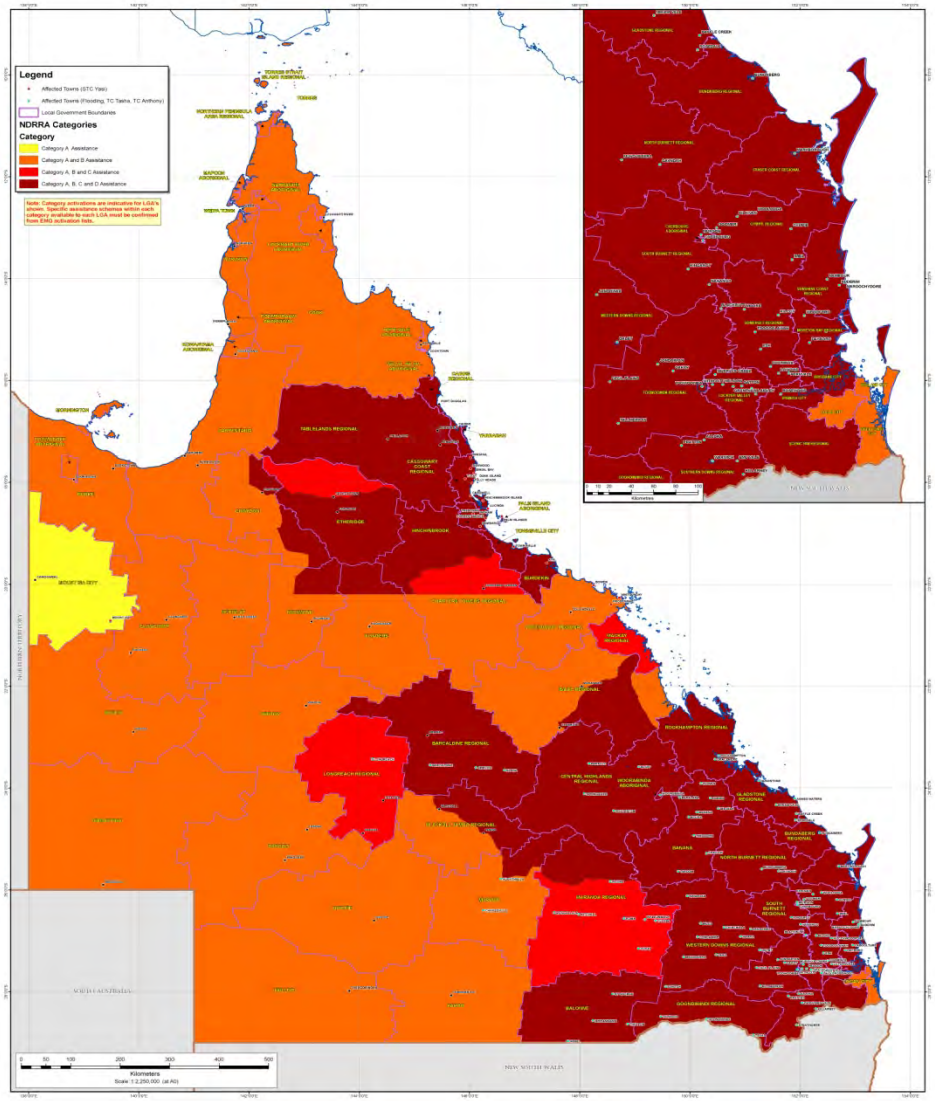
[redacted]

Presentation Outline

- General Overview
- Scale & Scope of Damage
- Governance & Structure of Qld Reconstruction Authority
- Lines of Reconstruction
- State Plan & Timeline
- Qld Reconstruction Authority Act 2011
- Land Use Planning Team

Timeline of Queensland disaster events December 2010 to February 2011





Queensland Local Government Areas Disaster Activated Under NDRRA
for the Period November 2010 to March 2011

Activations covered include Queensland Flooding, Tropical Cyclones Tasha and Anthony (November 2010 to February 2011); Severe Tropical Cyclone Yasi (2nd February 2011); and Queensland Monsoonal Flooding (from 28 February 2011)

Source: EMG Disaster Activations Version 17 (Severe Tropical Cyclone Yasi), Version 28 (Queensland Flooding and Tropical Cyclones Tasha and Anthony) and Version 4 (Queensland Monsoonal Flooding).

As of 4th April 2011.

Queensland Reconstruction Authority

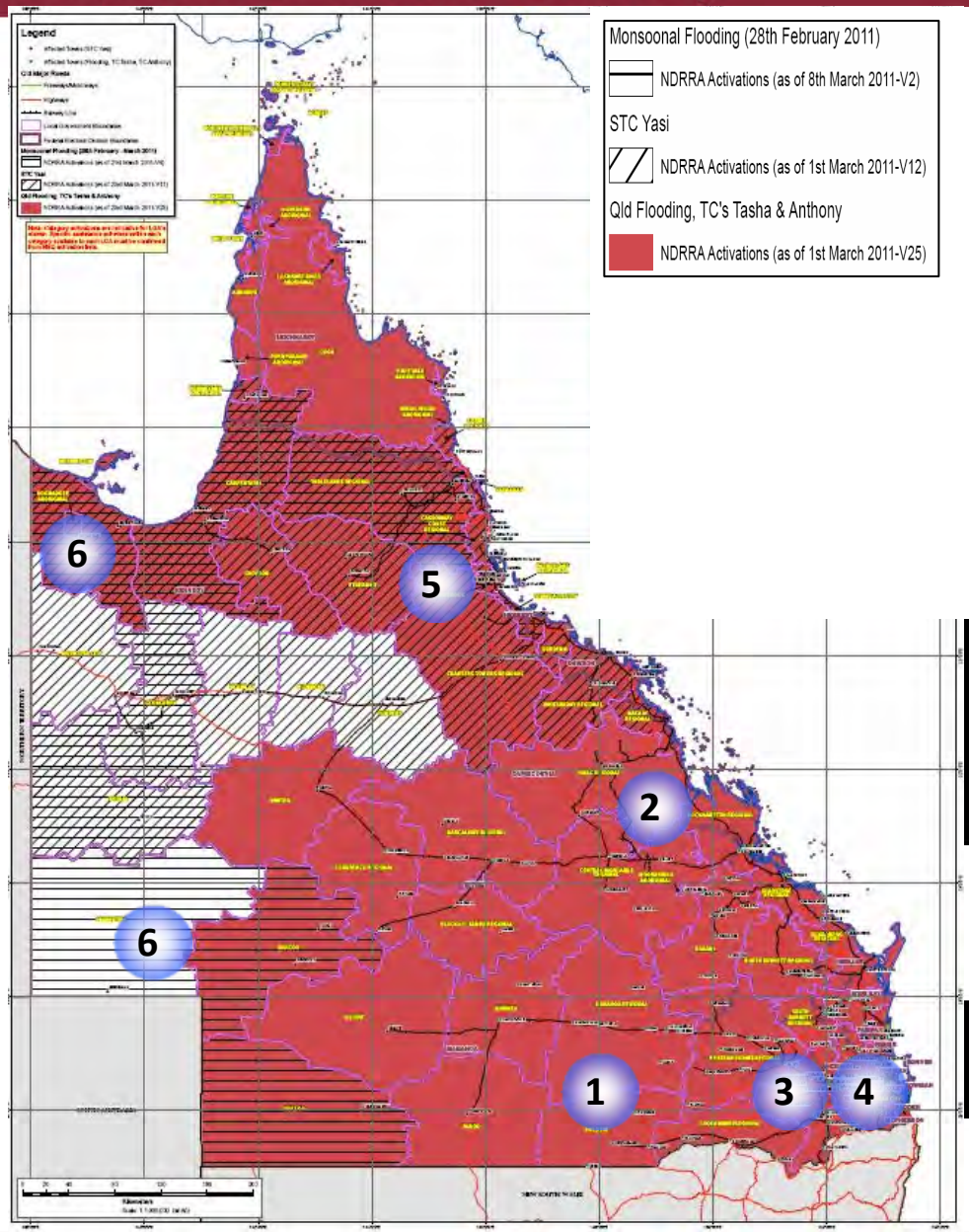
[redacted] Activation

[redacted]

vernment

n disaster

[redacted]



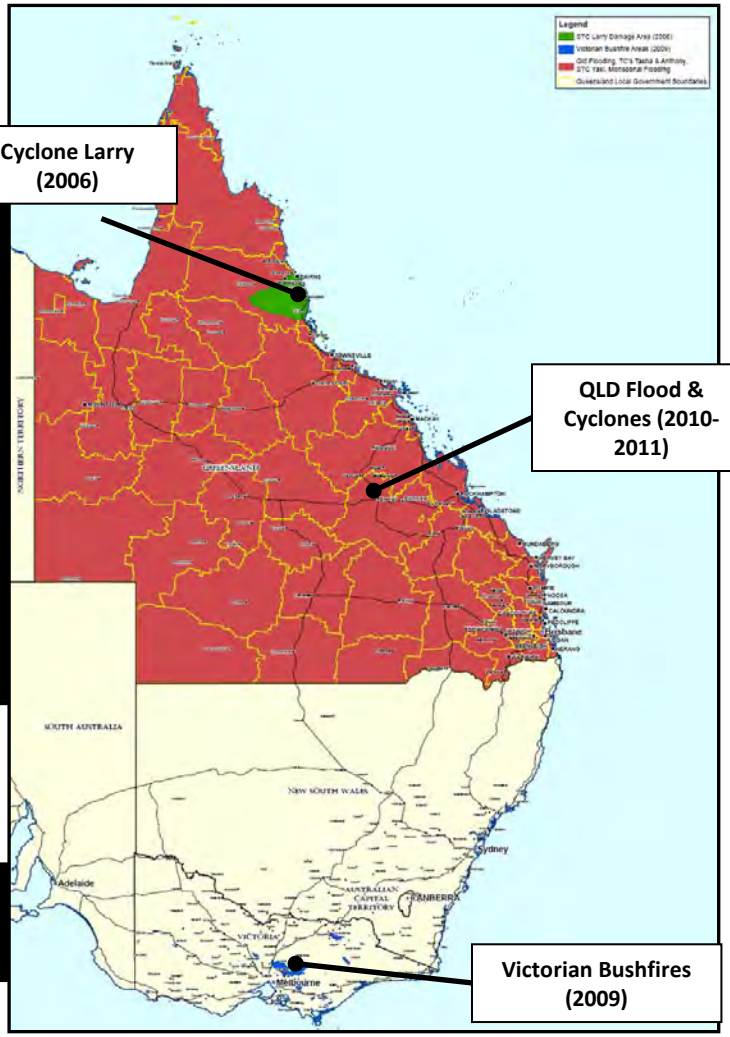
Disasters Events Covered:

1. **Early to Mid Dec 2010** - Extreme Rainfall & Flooding South-east/West QLD
2. **25 Dec 2010** - Tropical Cyclone Tasha
3. **10 Jan 2011** - Flash Flooding Toowoomba/Lockyer Valley
4. **13 Jan 2011** - Brisbane/Ipswich Flooding
5. **31 Jan to 2 Feb 2011** - Tropical Cyclone Anthony & Severe Tropical Cyclone Yasi
6. **28 Feb 11 to present** – Monsoonal Flooding

Disaster Comparisons – Infrastructure & People

Cyclone Larry (2006)

Local Government Areas Affected	10 of 73
Communities (Cities, Towns, Suburbs) Affected	Approx 40
Overall Damage C	[redacted]
Total Insurance	[redacted]
Relief Fund	[redacted]
People D	[redacted]
Local Governmer	[redacted]
Communities (Cities, To	[redacted]
Overall Damage Costs (estimated)	[redacted]
Total Insurance C [redacted] te)	10,000 ($1.09 billion)
Relief Funds (Appeals)	$392 million
People Deceased	[redacted]



Disaster Comparisons – Infrastructure & People

QLD Floods & Cyclones (Dec 2010 to Feb 2011)

Local Government Areas Affected	73 of 73
Communities (Cities, To	[redacted]
Overall Damage C	[redacted]
Total Insurance	[redacted]
Relief Fund	[redacted]
People D	[redacted]

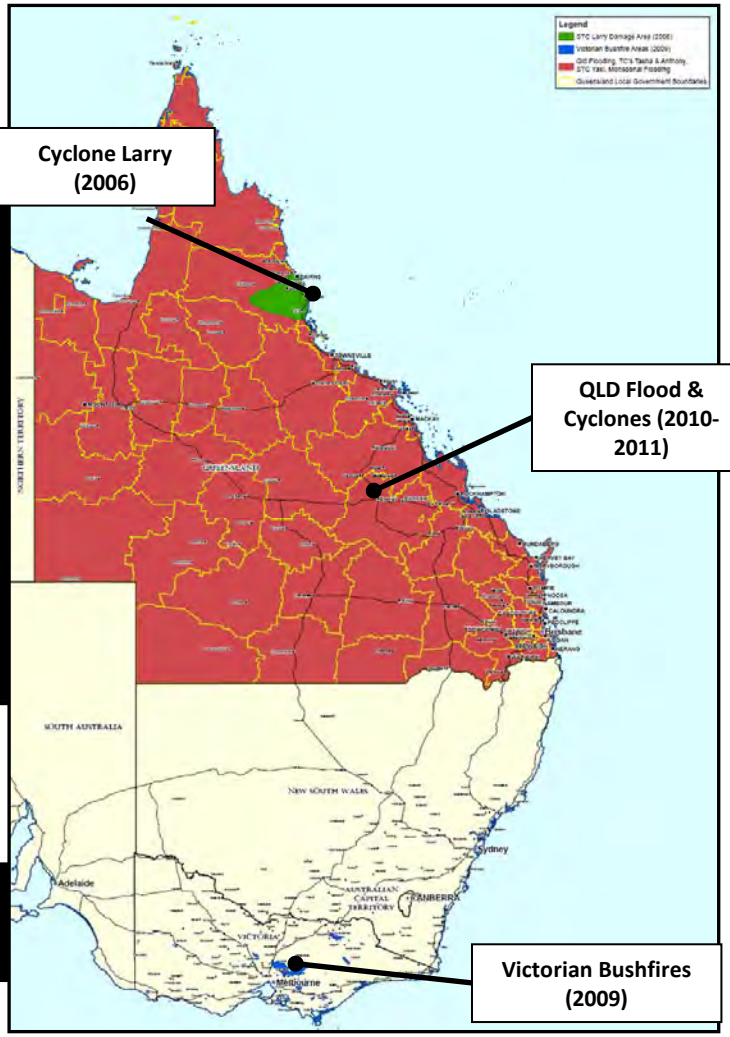
The disaster a[redacted]

3 x size of France

[redacted]ize of Germany

5.3 x siz[redacted]aly

[redacted]



Ipswich – Before the flood

Image taken : 2009

Ipswich – During the flood

Theodore – Before the flood

Image taken : 2009

Theodore – During the flood

Image taken : Jan 2011

Helidon – 10 January 2011

22 Minutes

Queensland Reconstruction Authority

Legend

- BoM TC Yasi Very Destructive Winds (Greater than 165 km/hr)
- BoM TC Yasi Destructive Winds (125-164 km/hr)
- BoM TC Yasi Gale Force Winds (90-125 km/hr)
- TC Larry Intense Damage area
- TC Larry Outer Damage area

Cairns

Almaden

TC Yasi Track

TC Larry Track

Innisfail

Mission Beach

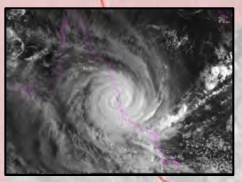
Gerogetown

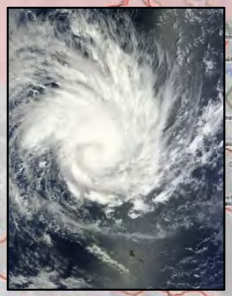
Cardwell

Ingham

Greenvale

Townsville





TC Larry

- 20-21 Mar 2006
- Category 4
- 945 hPa
- Gusts up to 240 km/hr

TC Yasi

- 2-4 Feb 2011
- Category 5
- 930 hPa
- Gusts up to 290 km/hr


Rockwall
Queensland (Department of Environment and Resource Management) 2011, © Pitney Bowes Software Pty Ltd, 2011. © PSMA Australia Limit

Queensland – Scale & Scope to Date

Fatalities – 37 (1)

QLD Roads – 9170km (2)

ex) – 250,000

oods & Yasi (Ergon)

nnes of coal ($2.5

paid (6)

– 11,419 received,

Damage Bill – Approx $5 billion for floods, $800 million post TC Yasi (7)

Insurance Claims – 109,390 (est $3.18 billion) (8)

April 11)

Key: (1) QPOL (2) DTMR (3) DTMR (4) ERGON/ENERGEX (5) DEEDI (6) DCS (7) QLD Treasury Press Releases of 4 & 16 Feb 11, QLD State Mid-Year Fiscal & Economic Review of 28 Jan 11 (8) Insurance Australia Council as of 24 Feb 11

Queensland – Scale & Scope to Date

Ports

- 11 major ports affected

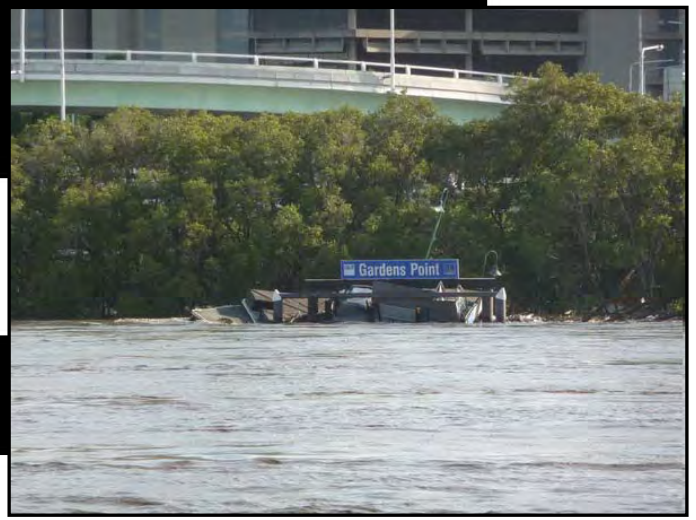
Ferries

- Significant d

Coal Mines

- 54 coal mi
  - 19 mine
    were pr
    2 mine
    interm

Baralaba mine west of Rockhampton



Brisbane City-Cat Terminal

Queensland – Scale & Scope to Date

Spring

- [redacted] road network
- [redacted] ork

Railway Line Damage from Moura to Gladstone 06 Jan 11

Queensland – Scale & Scope to Date

- $251,676,996 donated to premiers disa
(4 April 11)
- **10,000** North
evacuated to
Yasi
- **$4 billion** in
across n
tourism
- **$1 billion** in damage to p
producers fr

Emerald in Jan 2011

Queensland – Scale & Scope to Date

•425 education facilities impacted (including schools & TAFE)

• 1689 Go

• 2685 Go

• 52,749 a

assistance

• 11,4

essential

Yasi)

• Over $5

reconstru sts

Queensland – Insurance Australia Assessment

109,390 ins

(Insurance Coun

FLO

TC

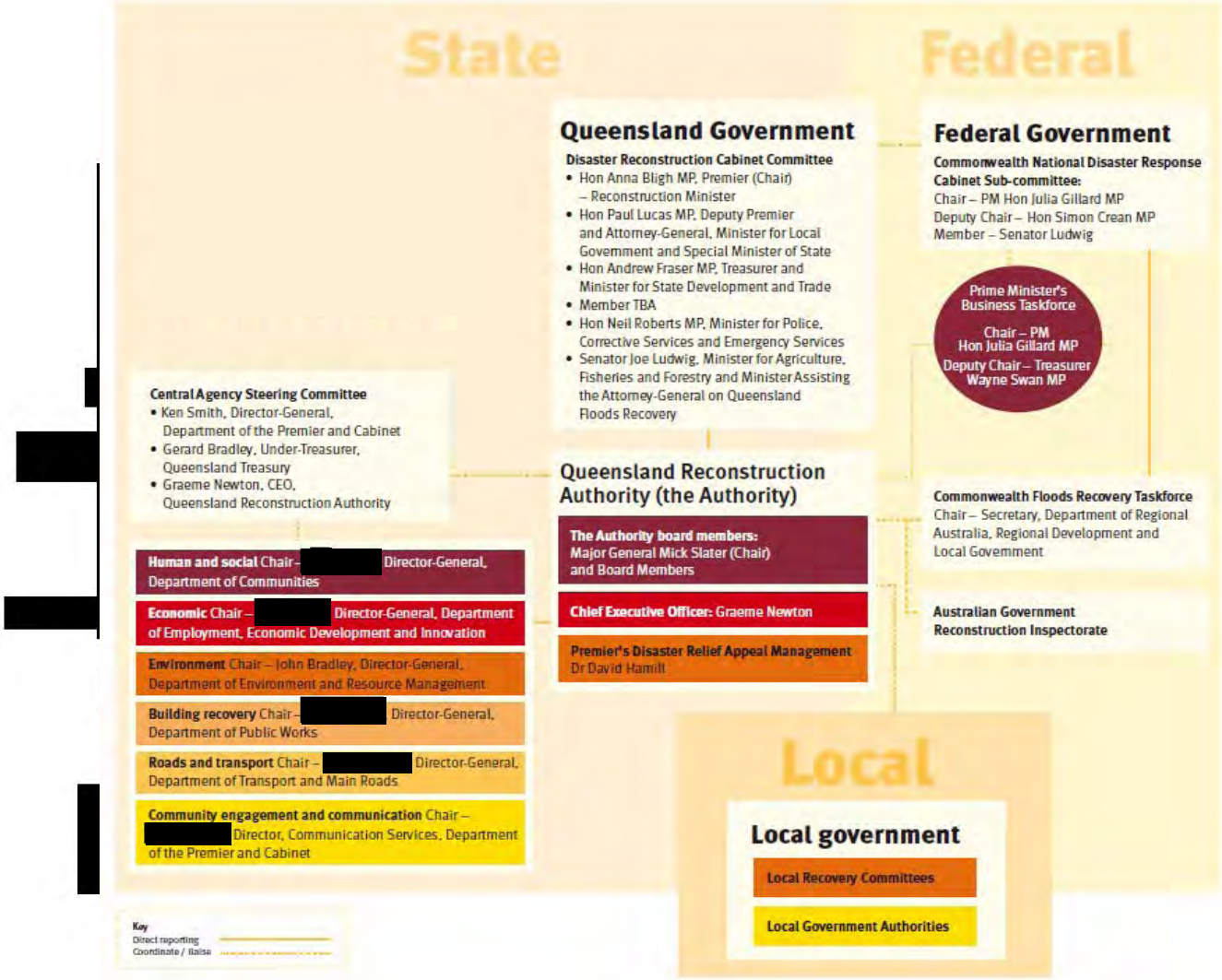
$3.18 bill

3333 decla

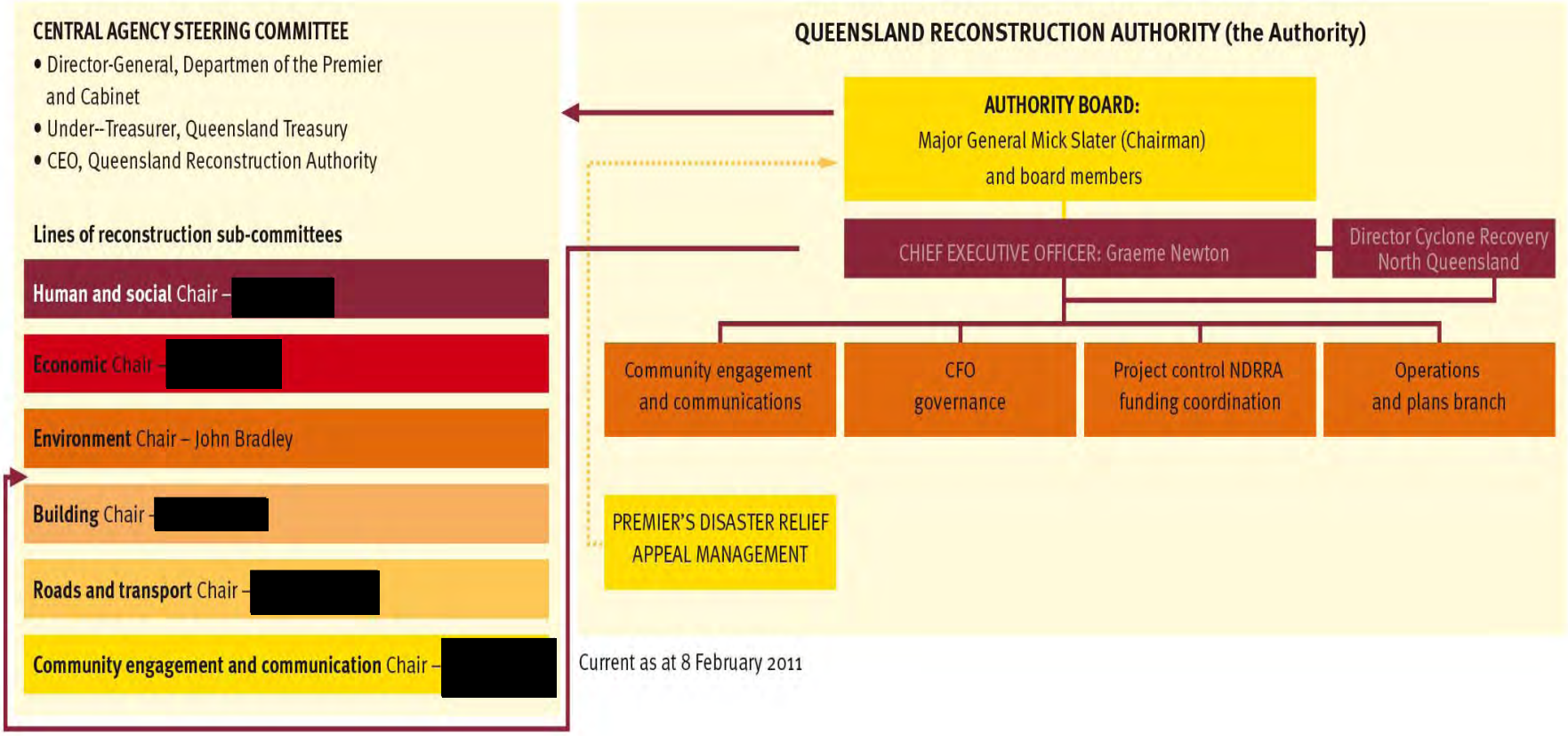
1785 dec

(vacate g repairs)

Governance


State
Federal
Queensland Government
Disaster Reconstruction Cabinet Committee
• Hon Anna Bligh MP, Premier (Chair) – Reconstruction Minister
• Hon Paul Lucas MP, Deputy Premier and Attorney-General, Minister for Local Government and Special Minister of State
• Hon Andrew Fraser MP, Treasurer and Minister for State Development and Trade
• Member TBA
• Hon Neil Roberts MP, Minister for Police, Corrective Services and Emergency Services
• Senator Joe Ludwig, Minister for Agriculture, Fisheries and Forestry and Minister Assisting the Attorney-General on Queensland Floods Recovery
Federal Government
Commonwealth National Disaster Response Cabinet Sub-committee:
Chair – PM Hon Julia Gillard MP
Deputy Chair – Hon Simon Crean MP
Member – Senator Ludwig
Prime Minister's Business Taskforce
Chair – PM Hon Julia Gillard MP
Deputy Chair – Treasurer Wayne Swan MP
Central Agency Steering Committee
• Ken Smith, Director-General, Department of the Premier and Cabinet
• Gerard Bradley, Under-Treasurer, Queensland Treasury
• Graeme Newton, CEO, Queensland Reconstruction Authority
Queensland Reconstruction Authority (the Authority)
The Authority board members: Major General Mick Slater (Chair) and Board Members
Chief Executive Officer: Graeme Newton
Premier's Disaster Relief Appeal Management Dr David Hamill
Commonwealth Floods Recovery Taskforce
Chair – Secretary, Department of Regional Australia, Regional Development and Local Government
Australian Government Reconstruction Inspectorate
Human and social Chair – [redacted] Director-General, Department of Communities
Economic Chair – [redacted] Director-General, Department of Employment, Economic Development and Innovation
Environment Chair – John Bradley, Director-General, Department of Environment and Resource Management
Building recovery Chair – [redacted] Director-General, Department of Public Works
Roads and transport Chair – [redacted] Director-General, Department of Transport and Main Roads
Community engagement and communication Chair – [redacted] Director, Communication Services, Department of the Premier and Cabinet
Local
Local government
Local Recovery Committees
Local Government Authorities
Key
Direct reporting
Coordinate / liaise

Authority Structure

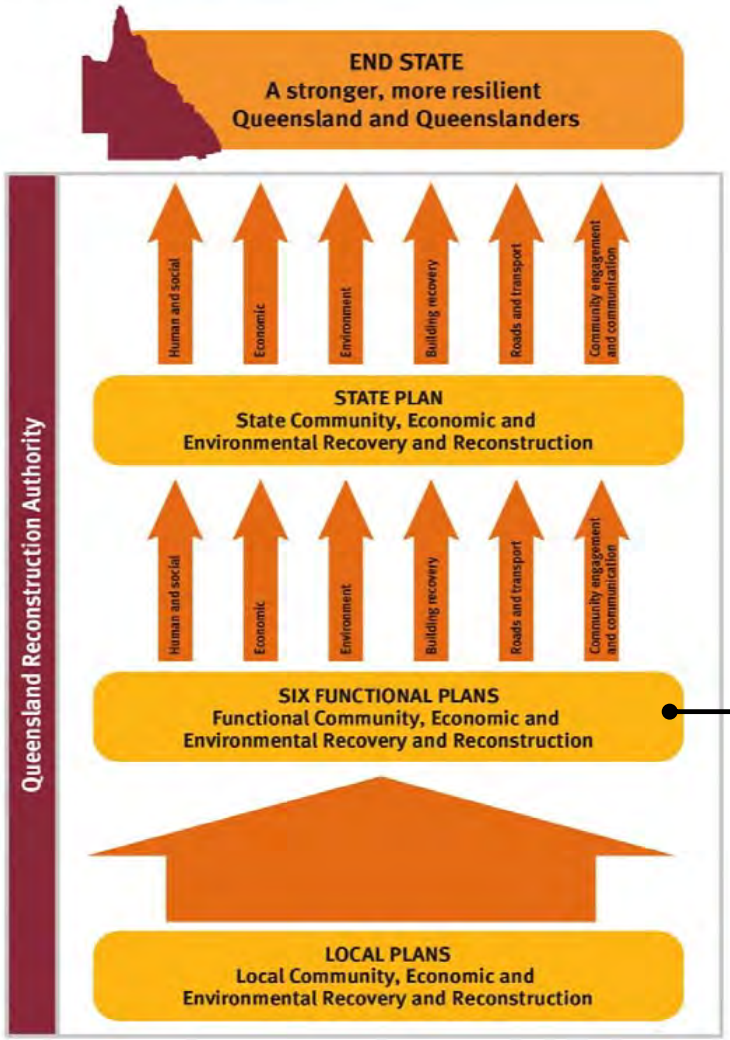


[redacted]

Queensland Reconstruction Principles

1. People are the highest priority.
2. Queensland's Main Effort is rebuilding and reconnecting communities, within a strong and resilient social, economic and environmentally sustainable framework.
3. QldRA has the authority to pass, verify, monitor, assist and influence the expenditure of reconstruction funds in accordance with budgetary priorities in Queensland, and Queensland/Federal financial partnering processes and insurance considerations.
4. The QldRA prioritises the reconstruction requirements for economic growth, development, rebuilding and environmental compliance.
5. The QldRA seeks and wins resources and prioritises reconstruction effects, including disaster preparedness and mitigation policies.
6. The Flood Appeal Distribution Committee is independent from the QldRA.
7. Lines of Reconstruction detail flood reconstruction costs directly to QldRA.
8. Decisions are to be made at the most relevant level, recognising that community lead processes are a significant factor in successful community recovery and rebuilding.
9. QldRA will operate within a lean resource environment, minimising internal administrative costs.
10. Information given to the QldRA may be available to the Commission of Inquiry, subject to Right to Information and commercial-in-confidence provisions.
11. QldRA provides input in to the national review of Natural Disaster Relief and Recovery Arrangements (NDRRA).

Operation QUEENSLANDER Construct



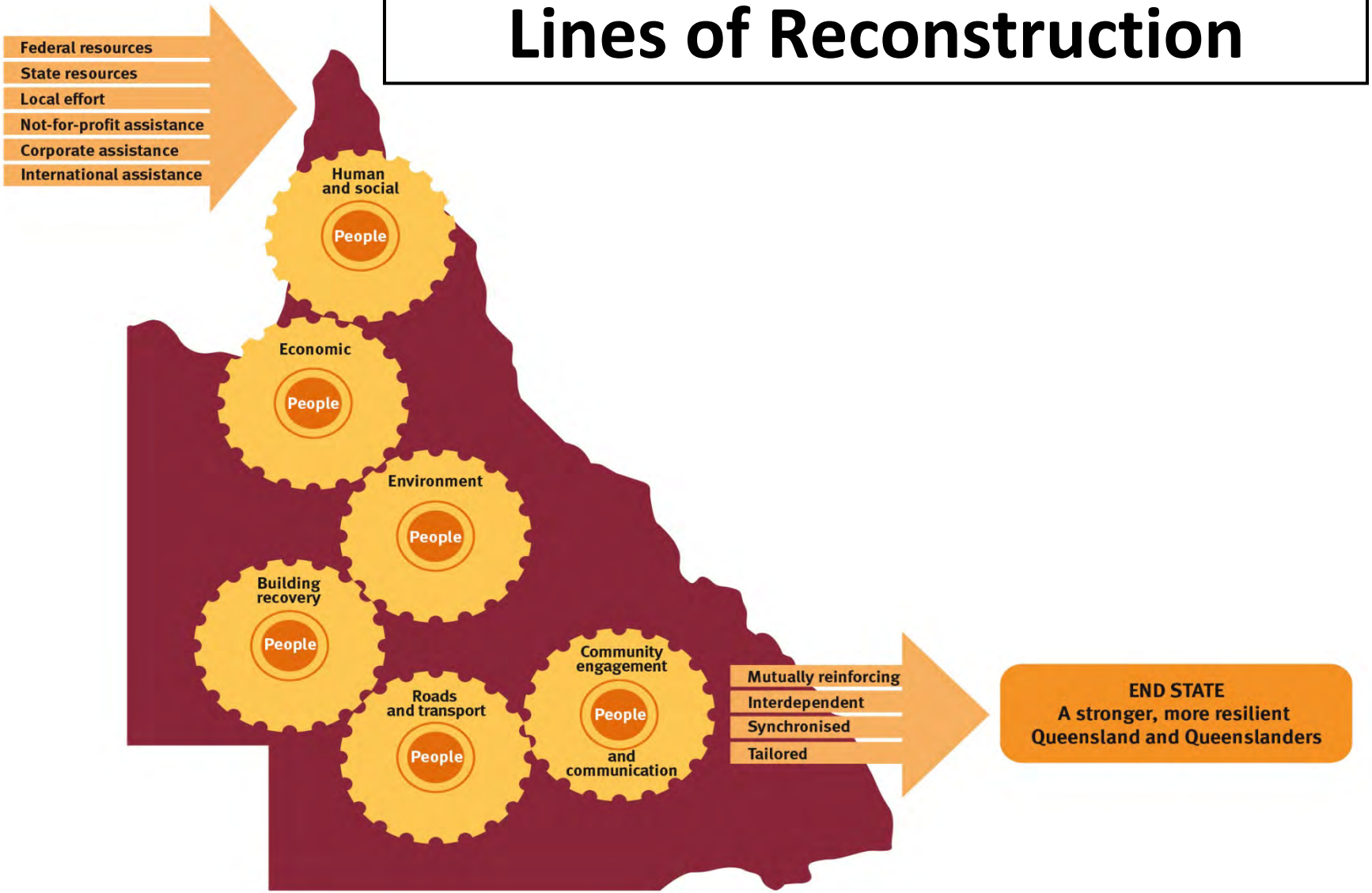
[redacted]

[redacted]

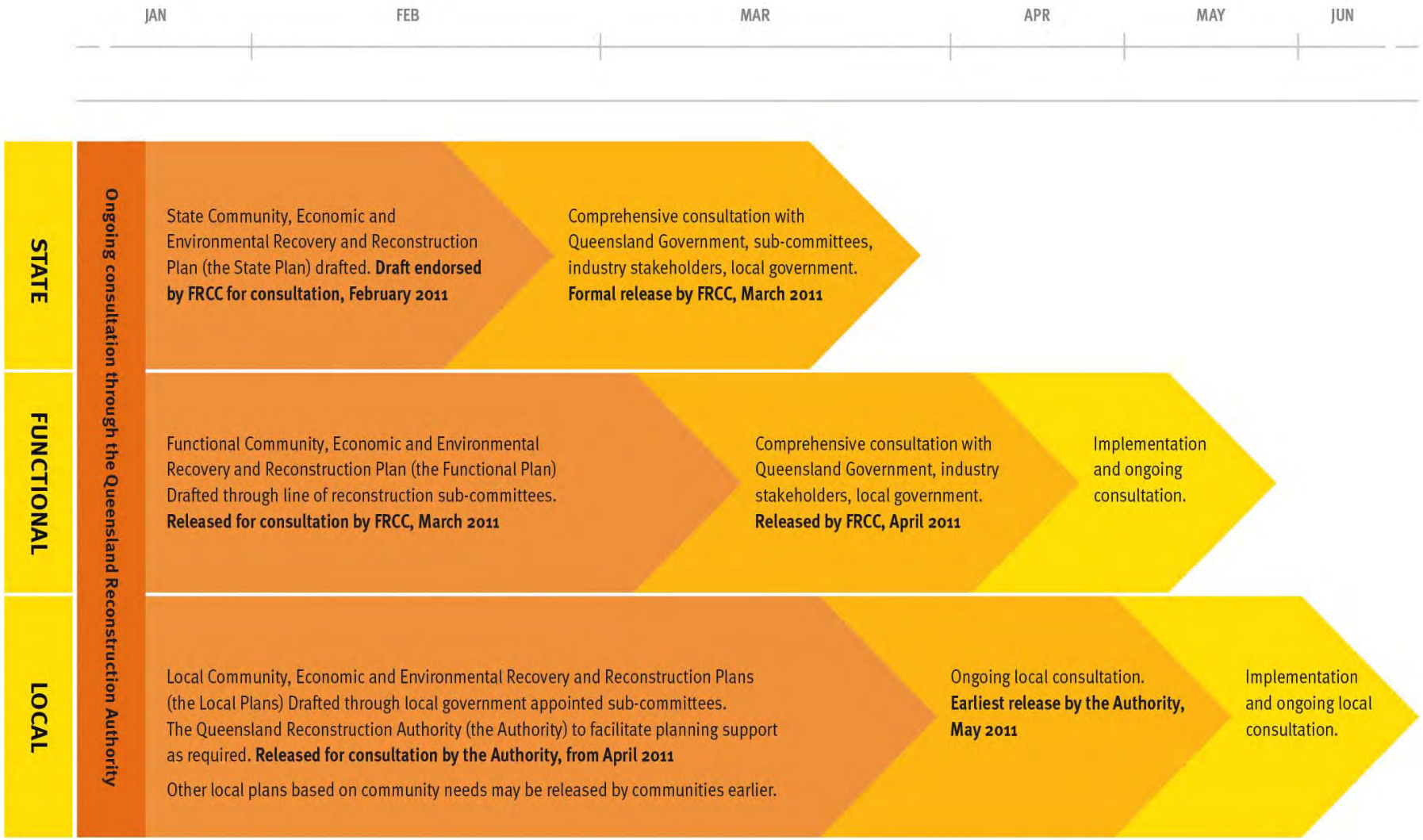
[redacted]

[redacted]ueenslander
[redacted]n Plans:
[redacted]ocial IP
2.Economic IP
3.Environment IP
4.Building Recovery IP
[redacted]ansport IP
[redacted] Engagement
[redacted]ations IP

Lines of Reconstruction



Planning and Implementation Timeline



Queensland Reconstruction Authority Act 2011

"to provide appropriate measures to ensure Queensland & its communities effectively & efficientl events"

Coordi

Qld Recor

- Decide on **p** impacted by
- **Work closel**
- Collect & collate information
- Develop arra s for the sharing of data across government
- **Coordinate & distribute fi s** relating to disaster recovery
- **Facilitate flood mitigation** es for communities
- Provide ad Inquiry (CC

Queensland

Queensland Reconstruction Authority Act 2011

Act No. 1 of 2011

Key Provisions of the QRAA 2011

The Queensland Reconstruction Authority Act 2011 prescribes governance arrangements of the QRA and the QRA Bo[redacted]ides the Authority with speci[redacted]g:

- declara[redacted]
- power[redacted]mediate pu[redacted]itigation;
- genera[redacted]cting, demoli[redacted]
- pow[redacted]
- powers [redacted]ect changes to existing planning schemes;
- powers to hasten [redacted]ions and processes of decision makers to finalise a proce[redacted]

Overall Core Objectives and Responsibilities

- Facilitate and lead:-
  - land use planning, environment a[redacted] outcomes (*re*[redacted] LPI, [redacted]
- Lead the [redacted]mentation of the Qld Reconstruction Authority Act 2011 to support the QldRA core business (No one size fits all approach to planning for affe[redacted])

Overall Core Objectives and Responsibilities

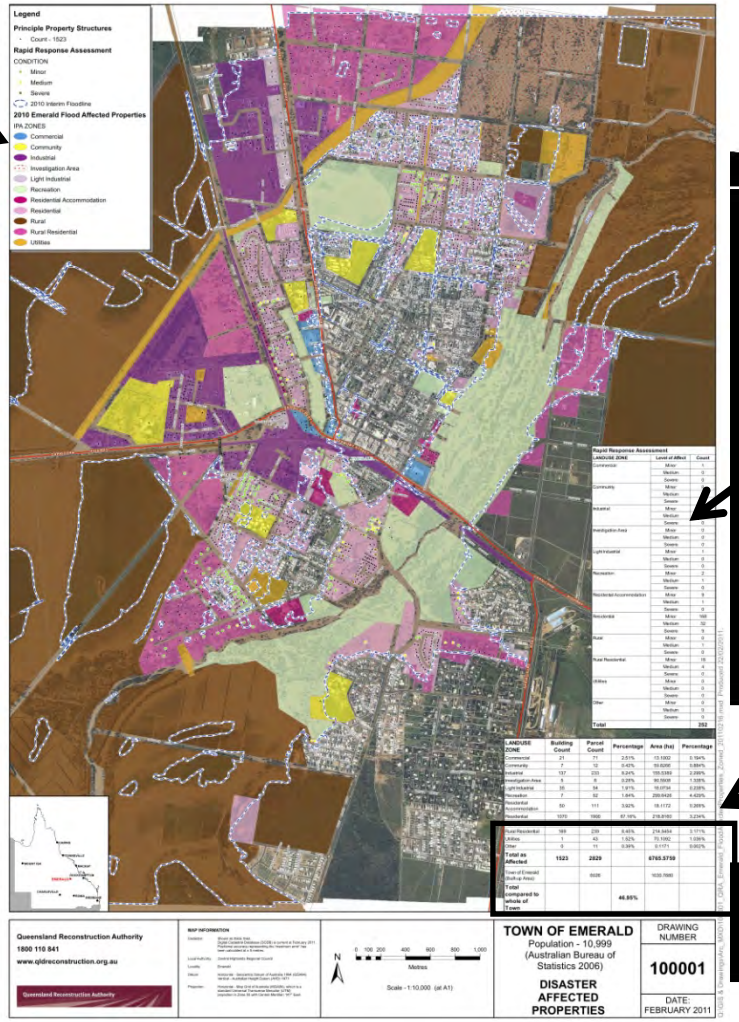
- Provide strategic policy advice in line with QldRA core business
- Establish [redacted] ry bodies to facilitate
- Analyse [redacted] nts

Example of Data Analysis

Legend
Including interim flood lines and land use overlay

Land Use Analysis of Affected Properties

Town of Emerald



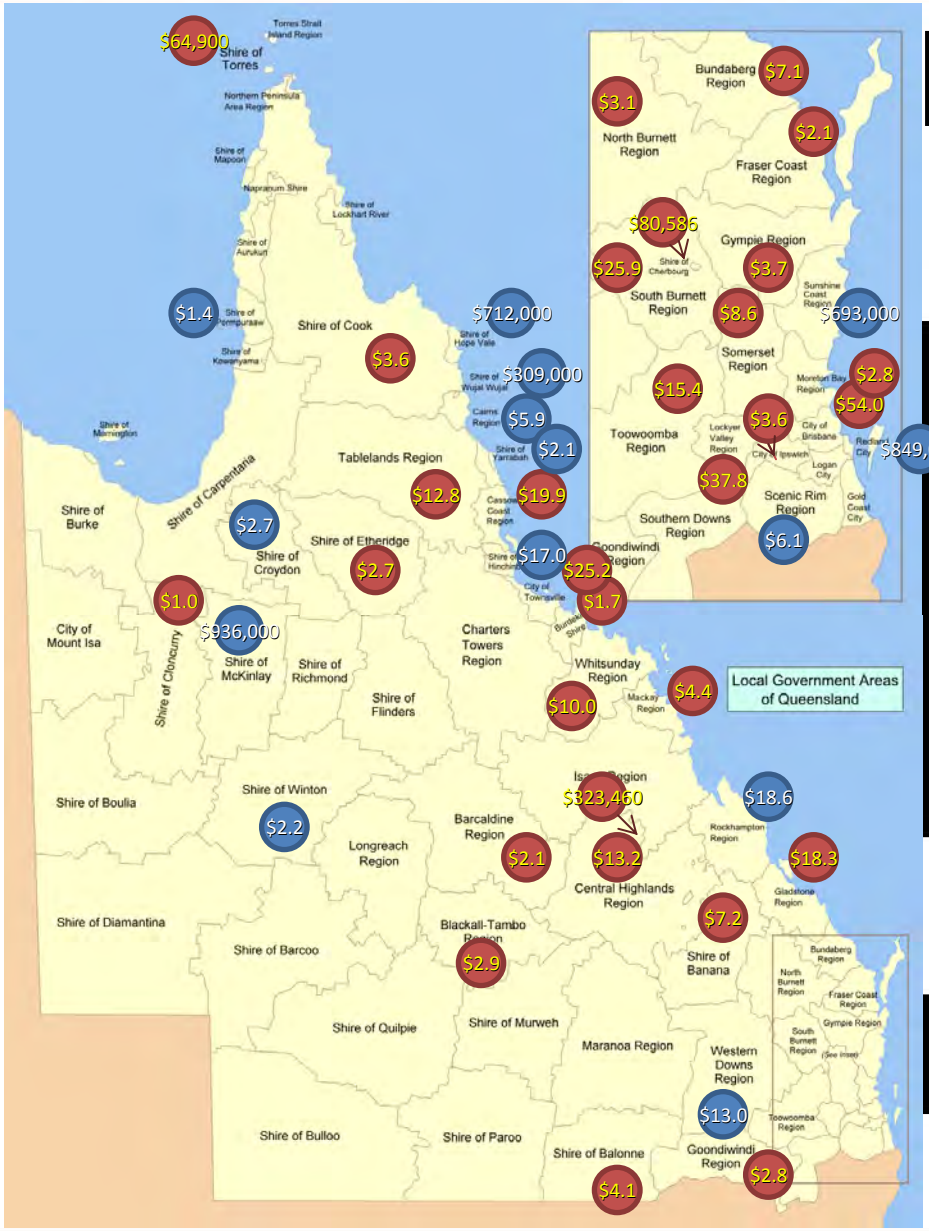
Rapid Response Assessment

Overall Assessment including total % of town affected by the event

Recreation	7	52	1.84%	299.6426	4.429%
Residential Accommodation	50	111	3.92%	18.1172	0.268%
Residential	1070	1900	67.16%	218.8160	3.234%
Rural	21	95	3.36%	5809.1385	82.907%
Rural Residential	169	239	8.45%	214.5454	3.171%
Utilities	1	43	1.52%	70.1092	1.036%
Other	0	11	0.39%	0.1171	0.002%
Total as Affected	**1523**	**2829**		**6765.5759**	
Town of Emerald (Built-up Area)		6026		1030.7680	
Total compared to whole of Town			**46.95%**		

Top Land Use Planning Matters

1. **People back in their homes** - stre[redacted]each to approv[redacted]
   - inc[redacted]n
   - Reb[redacted]
2. **Strate[redacted]**
3. **Wate[redacted]**
4. **Flood [redacted]**



Reconstruction Funding Achievements

New process – acceleration & advance

[redacted]

[redacted]

ed & State

DRRA)

uncils

lease

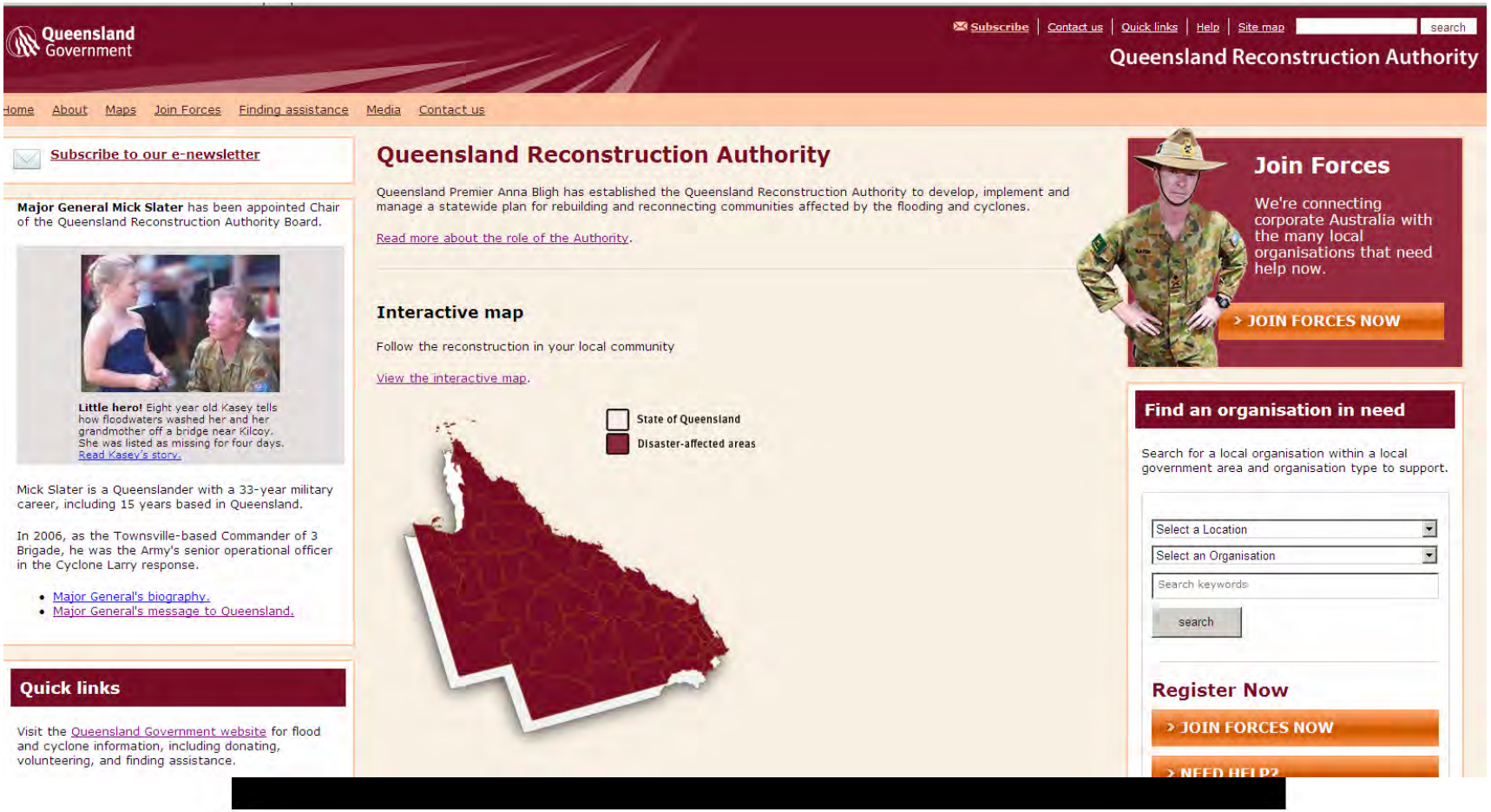
further funding

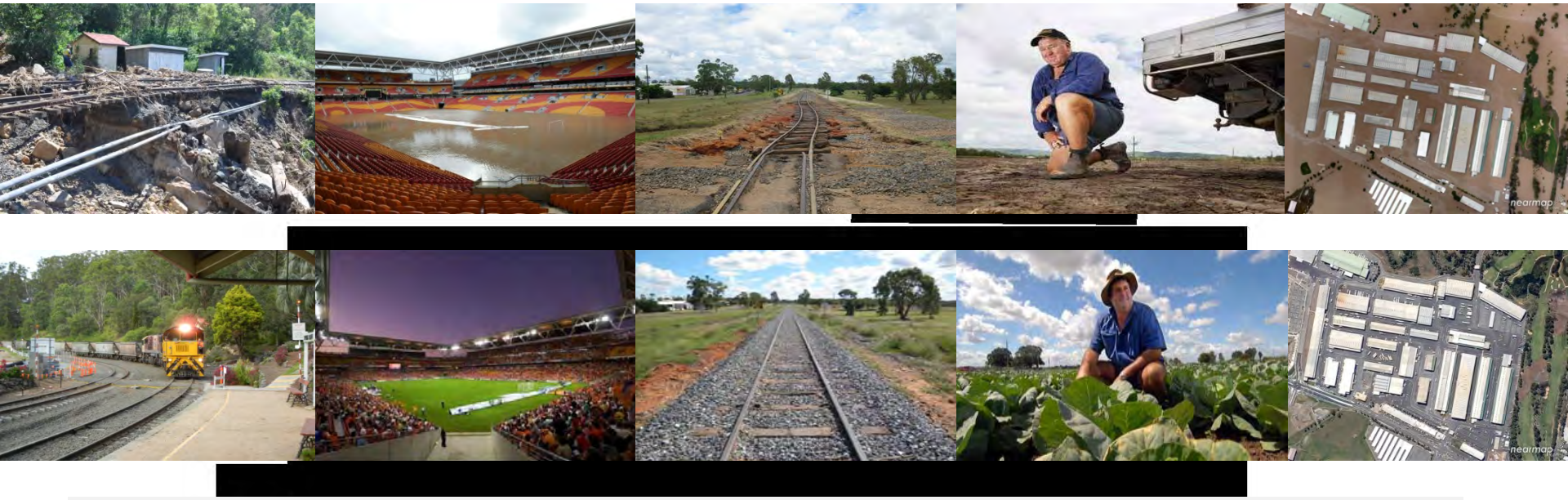
- More this week

[redacted]

NDRRA Funding (in $mil)	
Round 1 Allocation	
Round 2 Allocation	

www.qldreconstruction.org.au





Planning for stronger, more resilient flood plain management

Queensland Reconstruction Authority

NOT FOR CIRCULATION

Banana Shire Council – Flood Plain Management Workshop

Name	Organisation	Email Address
Brendan Nelson (BN)	QldRA	[redacted]
[redacted]		

Name	Organisation	Email Address
[redacted]		

Purpose of Workshop

- To provide an overview of the Queensland Reconstruction Authority – Flood Plain Management Project. The proposed deliverables of this project are:
  - ✓ Undertake an audit of planning scheme[redacted]d affected local gove[redacted]
  - ❑ Prov[redacted]s for local gove[redacted]
  - ❑ Dev[redacted] consistency in app[redacted] cross Que[redacted]
  - ❑ Prov[redacted]opment of tem[redacted]
- To work with Banana Shire Council and relevant state agencies in the development of inte[redacted]and long term controls for flood plain management
- To work with and su[redacted]Banana Shire Council in the preparation of a flood study to supp[redacted]
- To develop a guideline for local governments which provides a template for the preparation of flood studies and their integration with new planning schemes

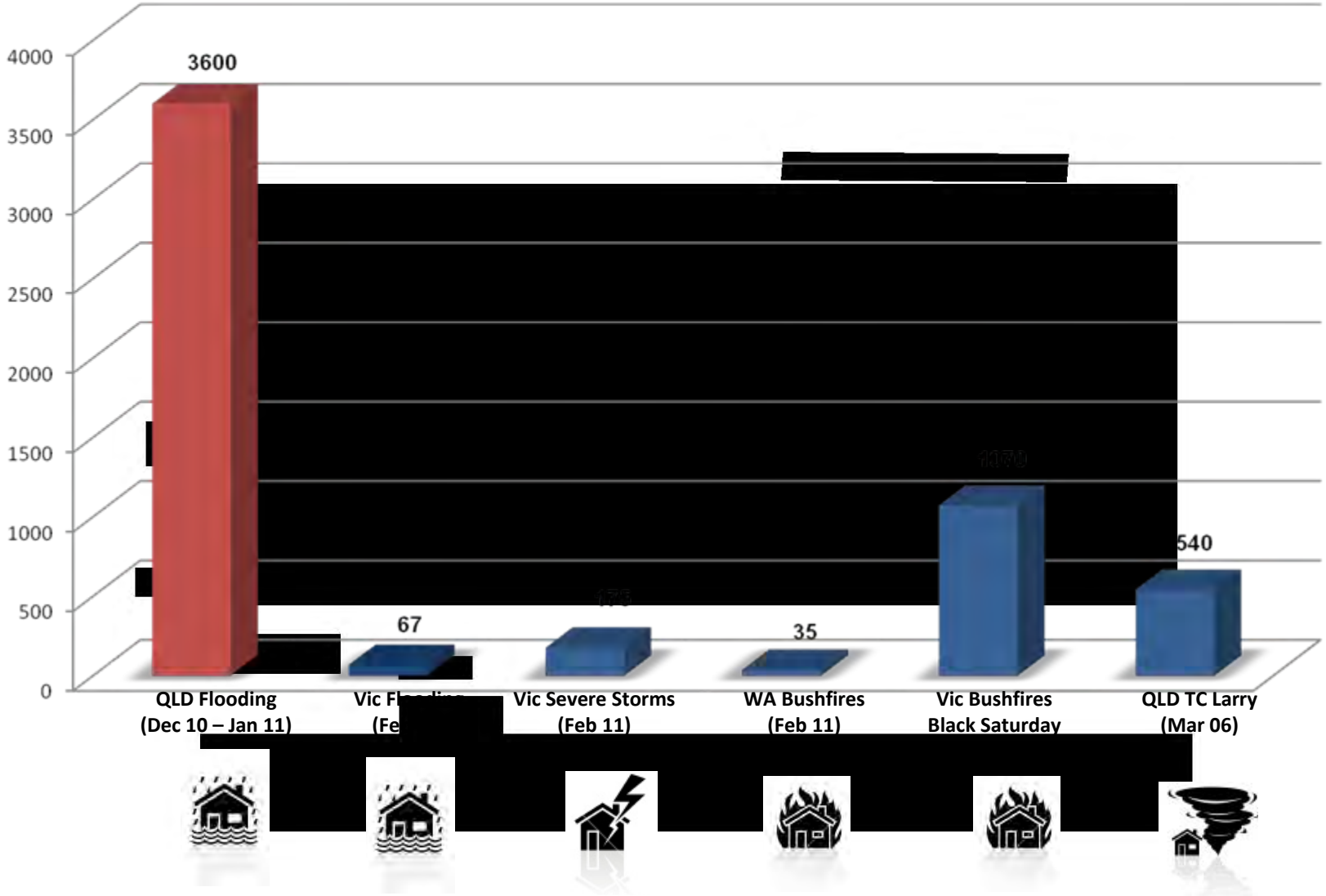
Context

- 2010/2011 Summer Events unprecedented
- **91%** of the State disaster activated as a result of flooding events
- **210** town
- **13** rivers including
- Total eva
- Critical I
  - wate clear
- Damage bill from flooding impact is $5.2B
- Commissi quir ay require Council's who haven't done mappi o so and to establish the predicte properti

Dawson

Theodore

Comparison of Insurance Claim Costs



Source: Insurance Council of Australia 6 May 2011

Queensland Reconstruction Authority

Established to ensure Queensland effectively
& efficiently recovers from the impact of

Functions

- Coordinat
- Prioritise
- Ascertain
- Distribute finance
- Collect information
- Facilitate
- Commission of Inquiry recommendations

ton, CEO
y Chair,
Major General Mick Slater

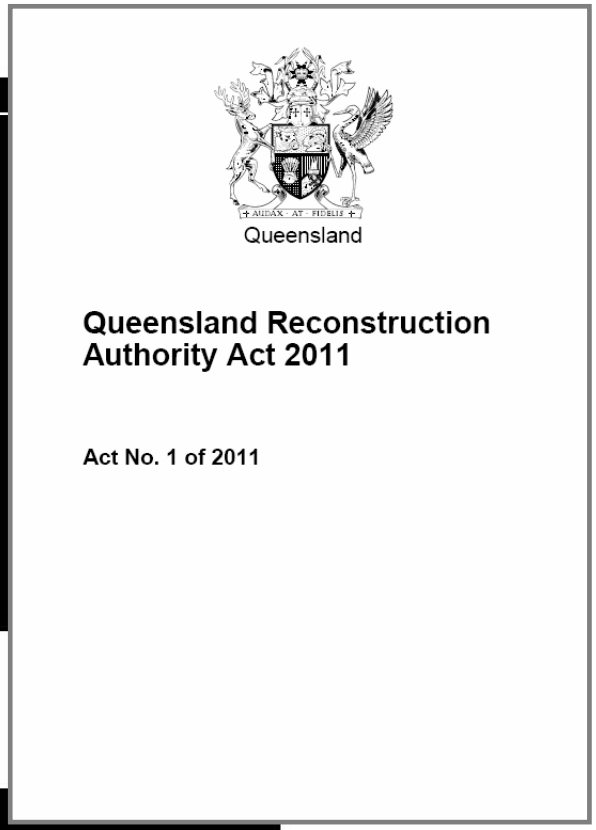
Legislation

The QldRA was created as a statutory authority through the
Act (QldRAA

The QldRAA
disaster eve
both **short term and longer term goals**

The QldRAA

The QldRAA expires af 2 years


Queensland

Queensland Reconstruction Authority Act 2011

Act No. 1 of 2011

Key Provisions of the QldRAA 2011

The QldRAA prescribes the governance arrangements of the QldRA and the QldRA Board. It also provides the Authority [redacted] powers to undertake a number [redacted]

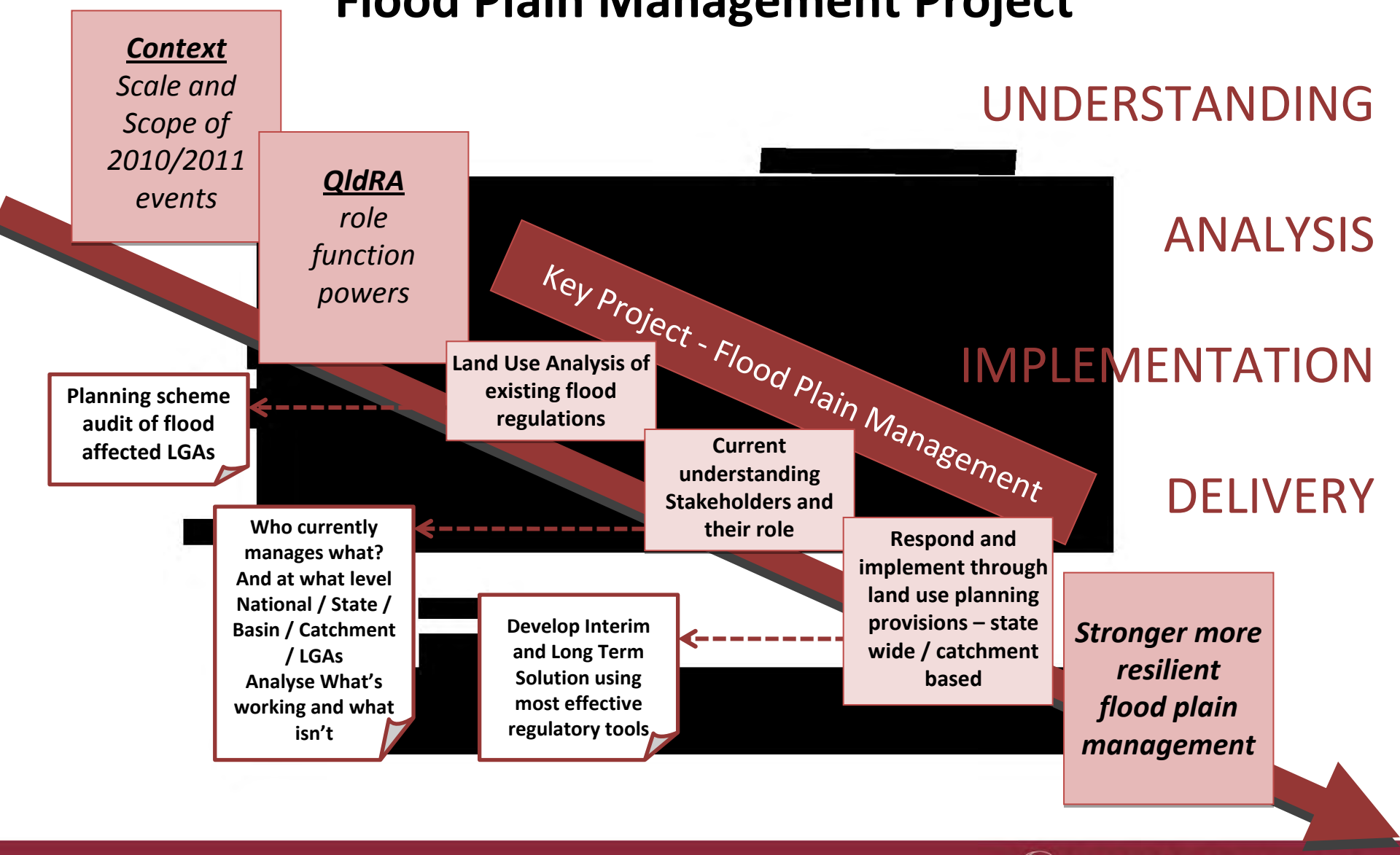
- ❑ declara[redacted]
- ❑ powers [redacted]e pur[redacted] mitigati[redacted]
- ❑ general [redacted] de[redacted]
- ❑ powers to create new development schemes
- ❑ **powers to direct changes to existing planning schemes**
- ❑ powers to hasten d[redacted]s and processes of decision makers to finalise [redacted]

Land Use Planning Team

- Grantham and Tully Heads/ Hull Heads – p[redacted]rebuild
- Ensure no [redacted]d tape
- **Flood Plain Management Project**
- Building ba[redacted]
- Support a[redacted]n respons[redacted]
- Critical Infr[redacted]ucture
- Strategic L[redacted]s and ensure [redacted]

[redacted]

Flood Plain Management Project



Flood Plain Management Project

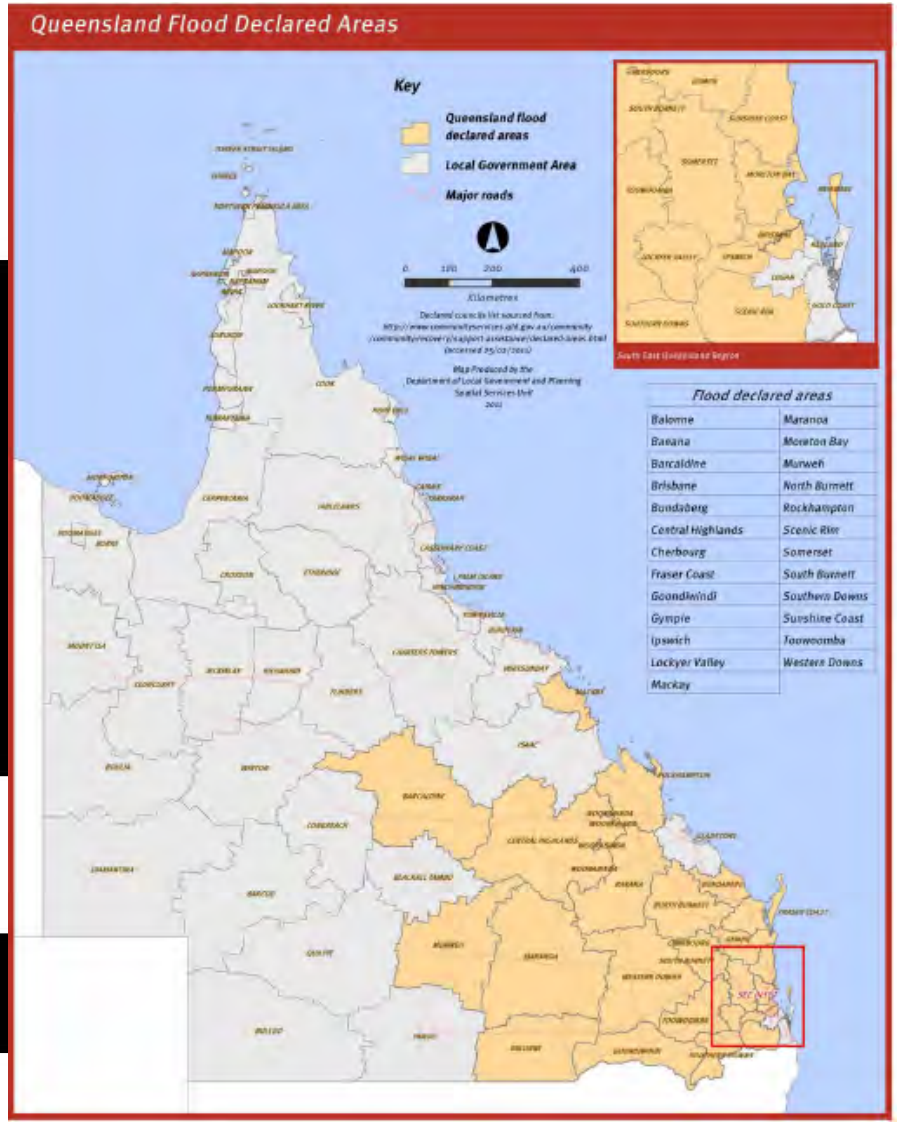
- Management of the adverse impacts on people and property is only one aspect of flood plain [redacted]
- Existin[redacted]y by local goverr[redacted]
- Difficu[redacted]ement are[redacted]
- Flood [redacted]al with futur[redacted] long term transit[redacted]rategies for existing areas at highest risk
- Previous appro[redacted]s to flood plain management have had limite[redacted]

Planning Scheme Audit

QldRA and DLGP jointly commissi[redacted] Scheme A[redacted] Consultan[redacted]

77 pla[redacted] reviewed [redacted] LGAs [redacted] activated [redacted] esult of flooding.[redacted]

Criteria based review



Planning Scheme Audit – Criteria

Table 2 Audit Criteria

	CRITERIA	DETAILS / QUESTION ADDRESSED	STANDARD RESPONSES
1	Local Government Areas	Local Government Area name.	
2	Planning	Statutory Planning Scheme name.	
3	Adoption Date	Date Planning Scheme was adopted by the Local Government.	
4	Flood Amendments	Based on the information available on Council's web site, did been any planning scheme amendments include flood provisions?	• Yes • No • Unknown
5	Appropriate Reflection of SPP1/03	Does the planning scheme appropriately reflect the SPP? The planning scheme expressly states that the relevant Minister was satisfied that the SPP is appropriately reflected in the planning scheme. The planning scheme does not specifically state that the Minister is satisfied that the planning scheme appropriately reflected the SPP, but the planning scheme provisions are in accordance with the requirements as outlined in Annex 4 of the SPP and Annex 5 of the SPP Guideline. It is not expressly stated in the planning scheme that the relevant Minister was satisfied that the SPP is appropriately reflected in the planning scheme and the planning scheme provisions are not in accordance with the requirements as outlined in Annex 4 of the SPP and Annex 5 of the SPP Guideline.	• Yes • Possible • No
6	Manner in which SPP1/03 is reflected.	A. The planning scheme expressly states that the relevant Minister has formally identified that the SPP has been appropriately reflected in the planning scheme. B. The planning scheme identifies a 'natural hazard management area' including land inundated by a Defined Flood Event (DFE) (SPP 5.1 and A3.1). C. The planning scheme adopts a DFE of 1% Annual Exceedance Probability (AEP) i.e. a Q100 OR alternatively the planning scheme adopts a different DFE, with adequate justification (SPP A3.2). D. The planning scheme includes the specific outcomes related to flood as outlined in the SPP Annex 4 and/or the SPP Guideline Appendix 5. E. The planning scheme is supported by a flood study (hydrologic /hydraulic/both) which defines the nature and extent of the flood hazard (SPP Guideline A2.17 – A2.20).	• A • B • C • D • E
		F. The planning scheme does not have a flood study, but is supported by an assessment of historical flood data, including historical data/interviews with long-term residents, use of older flood studies with limited scope, or dismissal of the need for a flood study as a result of topography or lack of flood history (SPP Guideline A2.21 – A2.26). G. The planning scheme contains appropriate planning strategies and development assessment measures that address flooding (for example development outcomes, overlays, specific hazard management codes, appropriate levels of assessment for development within natural hazard management areas, appropriate land uses on/near flood plain etc).	• F • G
7	Mapped Defined Flood Event	Is a defined flood event mapped and included in the planning scheme?	• Yes • No
8	Structure Plans	Are flood provisions included within any structure plans?	• Yes • No
9	Local Area Plans	Are flood provisions included within any local area plans?	• Yes • No
10	Planning Area Codes	Are flood provisions included within any planning area or zone codes?	• Yes • No
11	Use Codes	Are flood provisions contained within any specific use codes?	• Yes • No
12	Reconfiguring a Lot Codes	Are flood provisions contained within any reconfiguring a lot codes?	• Yes • No
13	Overlay Codes	Are flood provisions contained within any overlay codes?	• Yes • No
14	Planning Scheme Policies	Are flood provisions of details to support flood assessments contained within any planning scheme policies?	• Yes • No
15	Other	Are there any other provisions of the planning scheme which contain flood related provisions?	• Yes • No
16	Operational Works Code	Does the planning scheme contain an operational works code which contains provisions in relation to filling or excavation within a flood prone area?	• Yes • No
17	Overlay Code	Does a flood related overlay contain provisions in relation to filling or excavation within a flood prone area?	• Yes • No
18	Planning Scheme Policy	Does a planning scheme policy contain provisions or details to support flood assessments relevant to filling or excavation within and flood prone area?	• Yes • No
19	Other	Are there any other provisions of the planning scheme which contain flood related provisions?	• Yes • No

Planning Scheme Audit - Banana Shire

- Adopted: 7 October 2005
- SPP1/03: Appropriately reflected for the Landslide and Bushfire Elements but not flooding.
- Key Planning Provisions:
- **Developm**
  - **S3** - N
  - **PS.1** - delines"
  - **S18** - structured to:
    - s;
    - areas occurs only
    - aters below the
  - **PS18**
  - termination of Floor Levels" for the Town of Banana in particular. Note: The floor height of buildings will be gover is pla
- **Reconfig**
  - **S1** - o services and facilities, and safety from risk of natural hazards such as flooding, land slip and bushfire.
  - **No PS** - Suggests Reconfiguration of a Lot Assessment Report (includes known flood levels).

Planning Scheme Audit - Taroom Shire

- Adopted: 13 December 2006
- SPP1/03: Appropriately reflected for the Landslide and [redacted] not flooding.
- Key Planni[redacted]
- **Zone Cod[redacted]** dustrial / Open Space and[redacted]
- Applies t[redacted]
  - **PC** *Fl[redacted]*
  - [redacted]
  - *(a) no[redacted]*
  - *(b) to[redacted]*
  - [redacted]
  - **No AS** -Note: To assist an applicant to demonstrate compliance with PC, the maximum recorded flood [redacted] dopt[redacted]an indication of flood level.
- **Planning Scheme Poli[redacted]** formation Council May Request: Known / determined flood levels (fo[redacted]

Planning Scheme Audit - Findings

- 21 (27%) appropriately/ possibly [redacted]
- 37 (48%) [redacted]
- 19 ([redacted]) [redacted] identified as not appropriately reflecting [redacted]

[redacted]

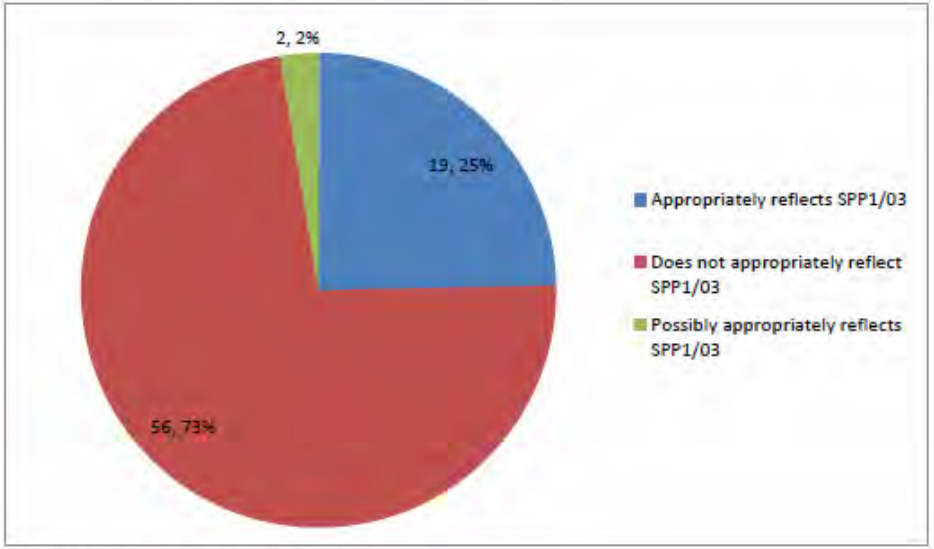


Figure 2 Appropriate Reflection of SPP1/03

Planning Scheme Audit

Neither Banana or the Taroom Planning Sch
SPP 1/03 wit

Opportunity
new Plannin
undertake a
planning/stu
into new
Planning Sche

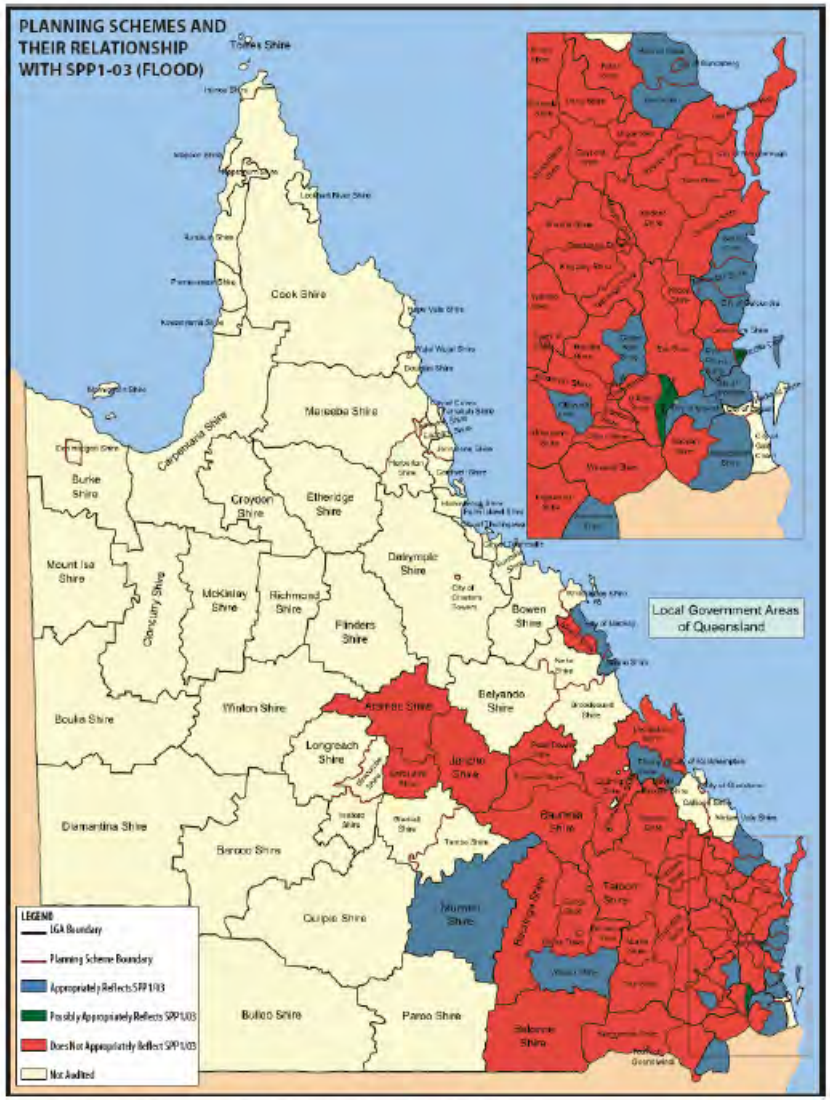


Figure 3 Planning Schemes and their Relationship with SPP1/03 (Flood)

Planning Scheme Audit

As shown in *Figure 5*, of the audited planning schemes, 32 (42%) included a mapped Flood Hazard Management Area while the remaining 45 schemes (58%) did not include flood related mapping.

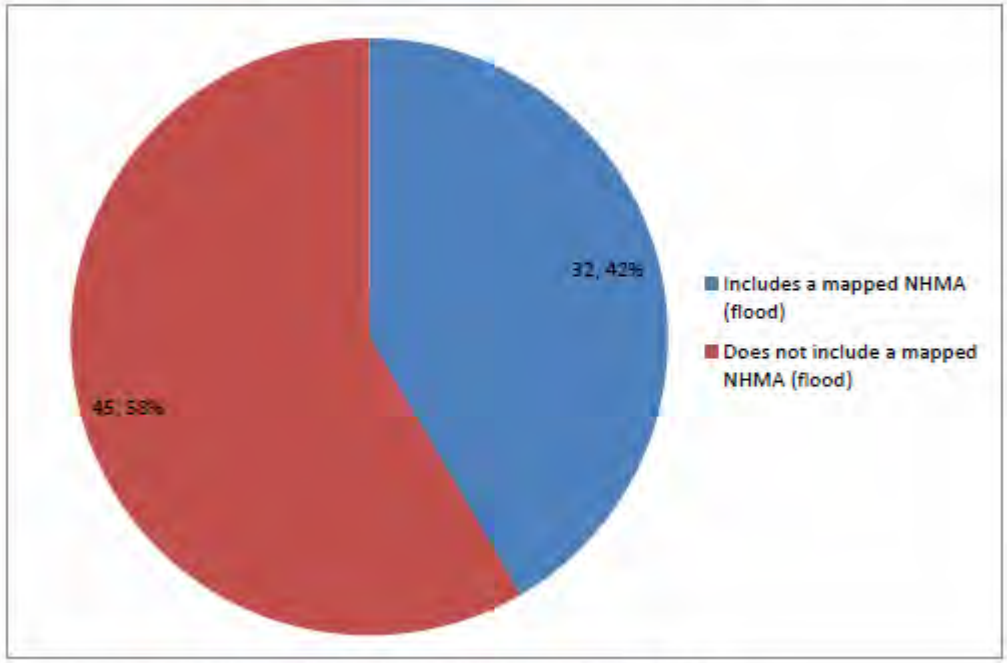


Figure 5 Inclusion of a Mapped Natural Hazard Management Area (Flood)

[redacted]

nana or

ng Schemes

HMA (Flood)

level plan"

is considered critical in any new SPA Schemes

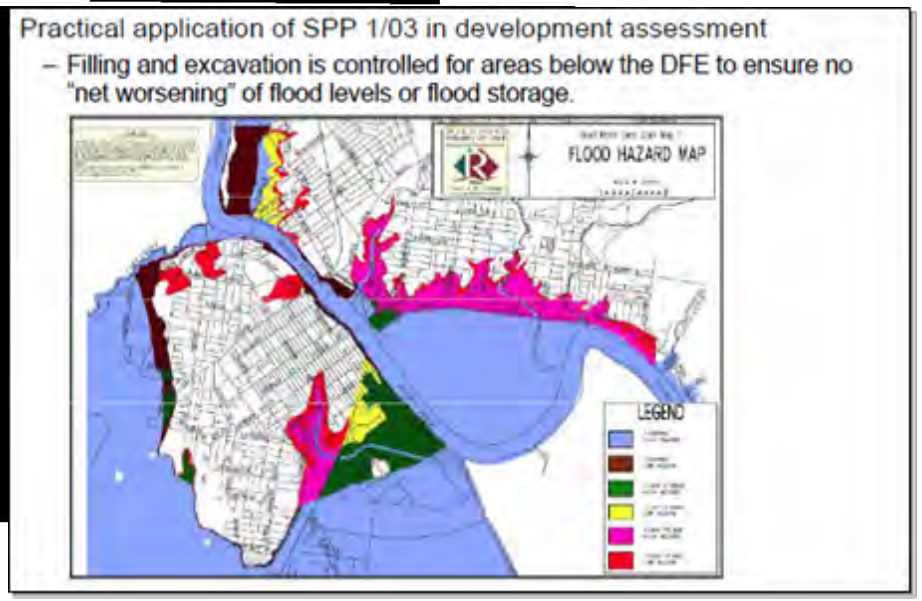
[redacted]

Planning Scheme Audit - Findings

- Every Planning Scheme treats Flood Plain Management differe[redacted]
- Flood [redacted] bound[redacted]
- Limite[redacted] data
- Nomin[redacted] between – Q100 [redacted] vels, none or a combination
- Disconnect between the objectives of SPP1/03 and the imple[redacted]

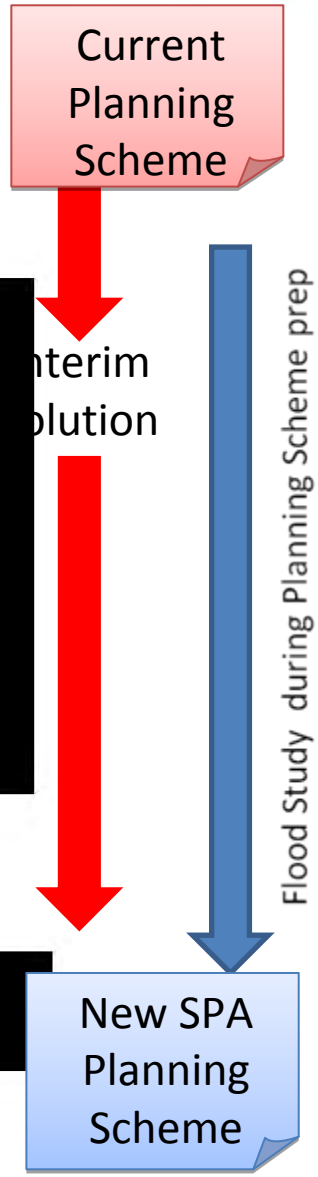
Rockhampton – example of robust provisions

- NHMA Mapped (includes high/low risk)
- Flood Ov
- Requirem and stor main
- AS - No n pro
- Building design requirements in flood prone areas – m nt materia
- Services above DFE

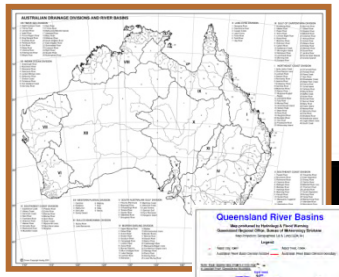


Solution Options

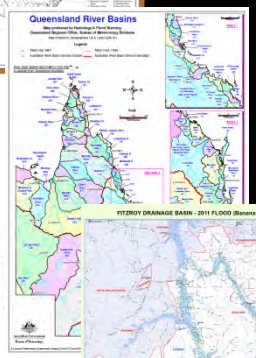
- Commission of Inquiry may require Council's who haven't done mapping to do so and to establish th[redacted] impact of[redacted]
- To do this[redacted] significant[redacted]
- Most Cou[redacted] Comp[redacted]
- Opportun[redacted] preparati[redacted] Council's
- An interim solution is necessary for those Council's not adequately protecte[redacted]s identified in the Planning Scheme [redacted]



Flood Plain Management – Line of Sight



Drainage Divisions
- Australia



River Basins
- Queensland

River Basin
- Fitzroy

Catchment
- Dawson River

Land Use Planning Scheme & Local Zoning

- Before defining Interim and Long Term solutions, [redacted] derstand [redacted] e existing [redacted] d Plain [redacted] Australia

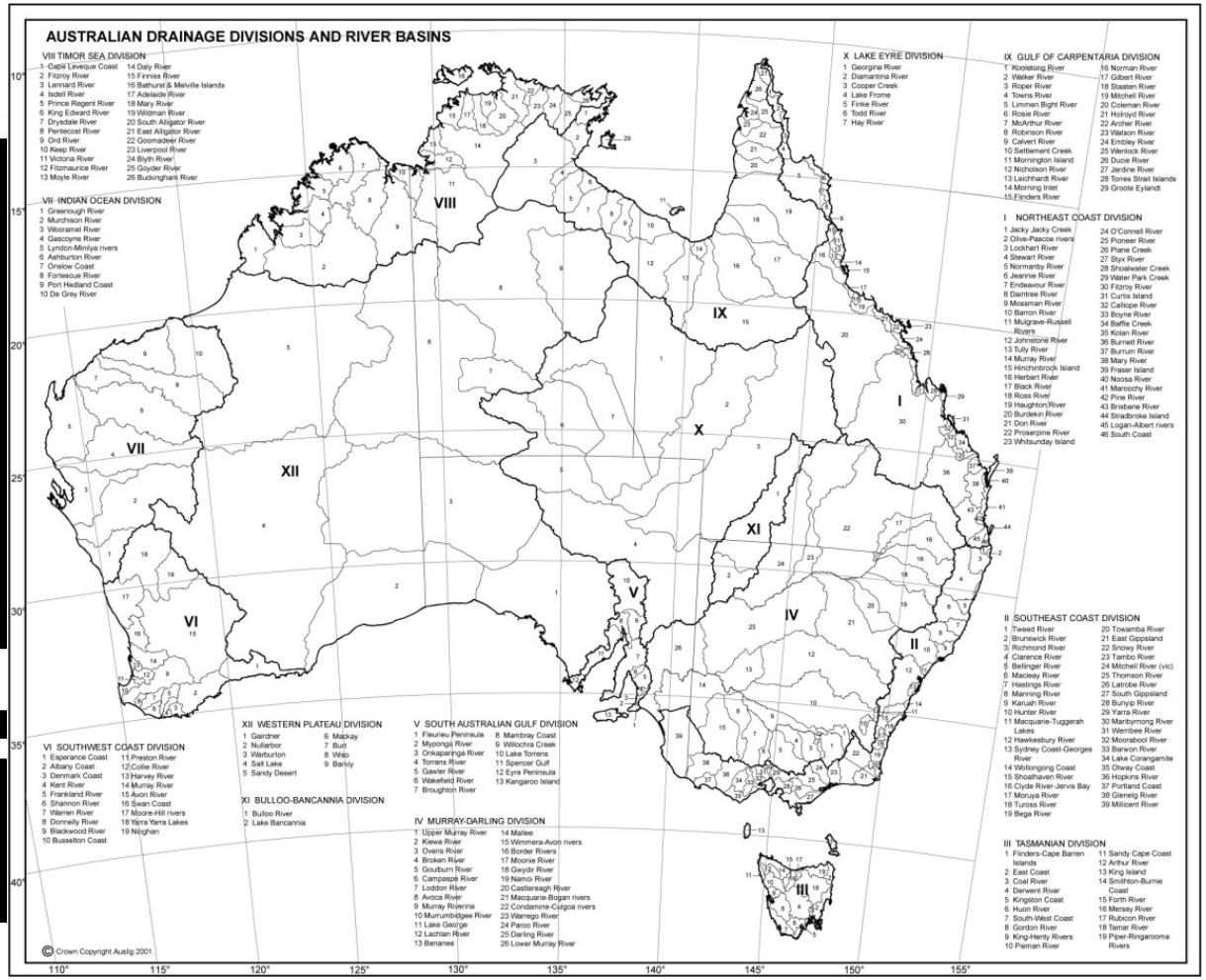
Drainage Divisions – Australia

12 Drainage Divisions and 246 River Basins across Australia

5 of the 12 Nat
Drainage Divisi
Queensland

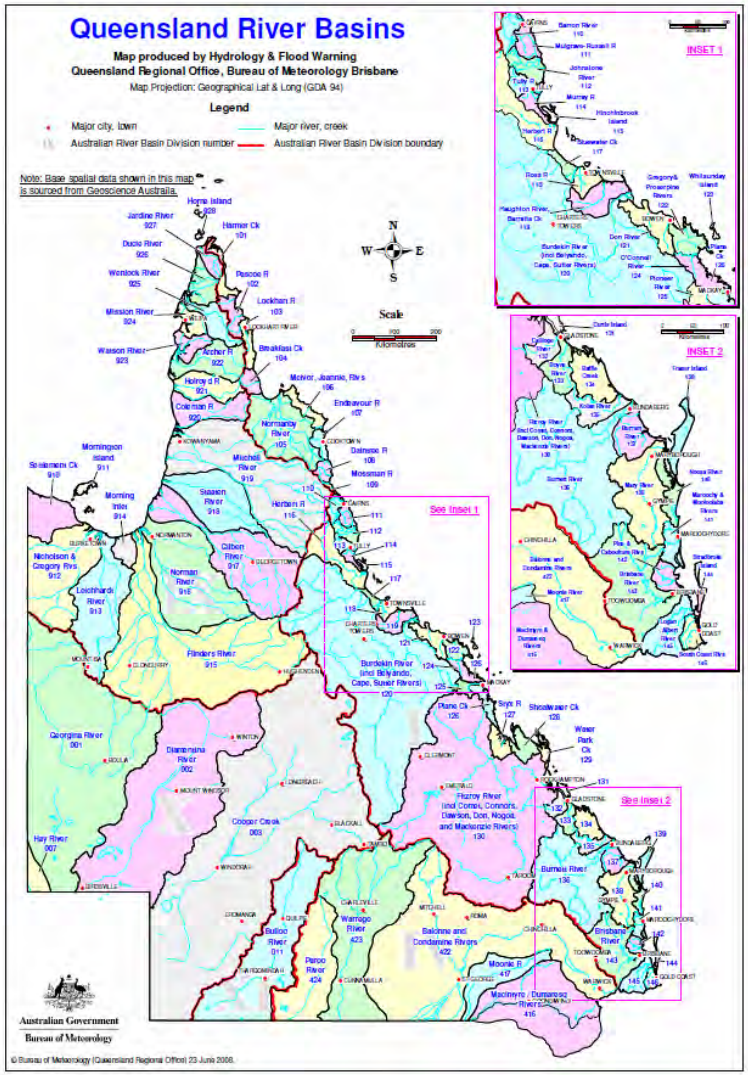
Often Complex
crossing state a
governmen

Different roles a
responsibilities for the long
term protecti
management
basins

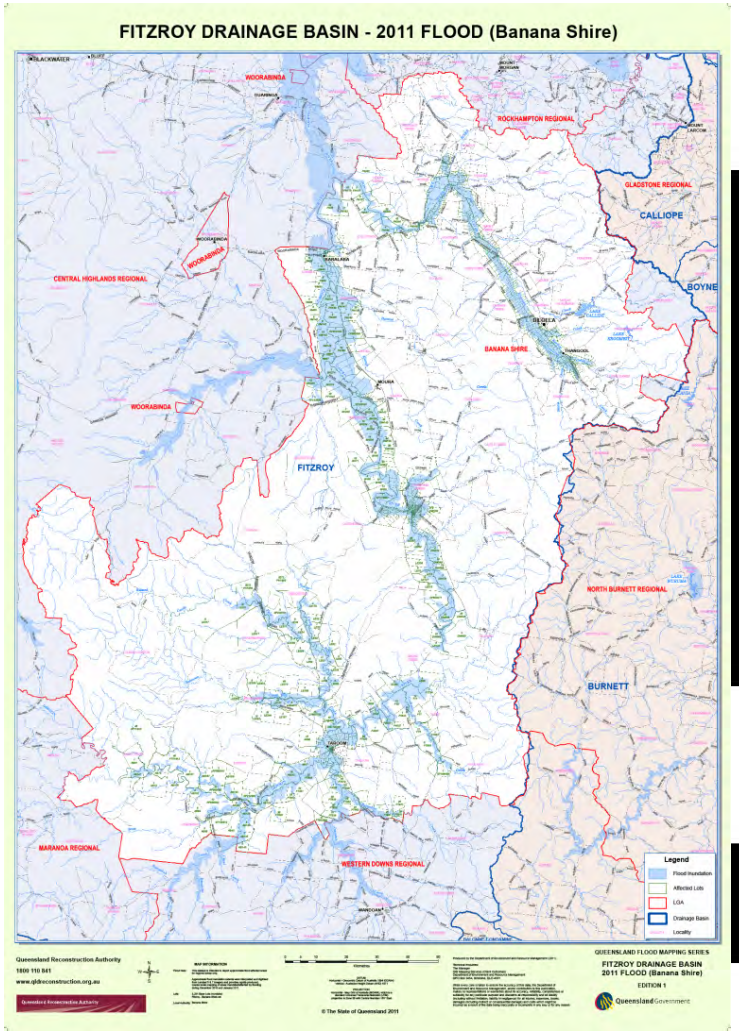


River Basins - Queensland

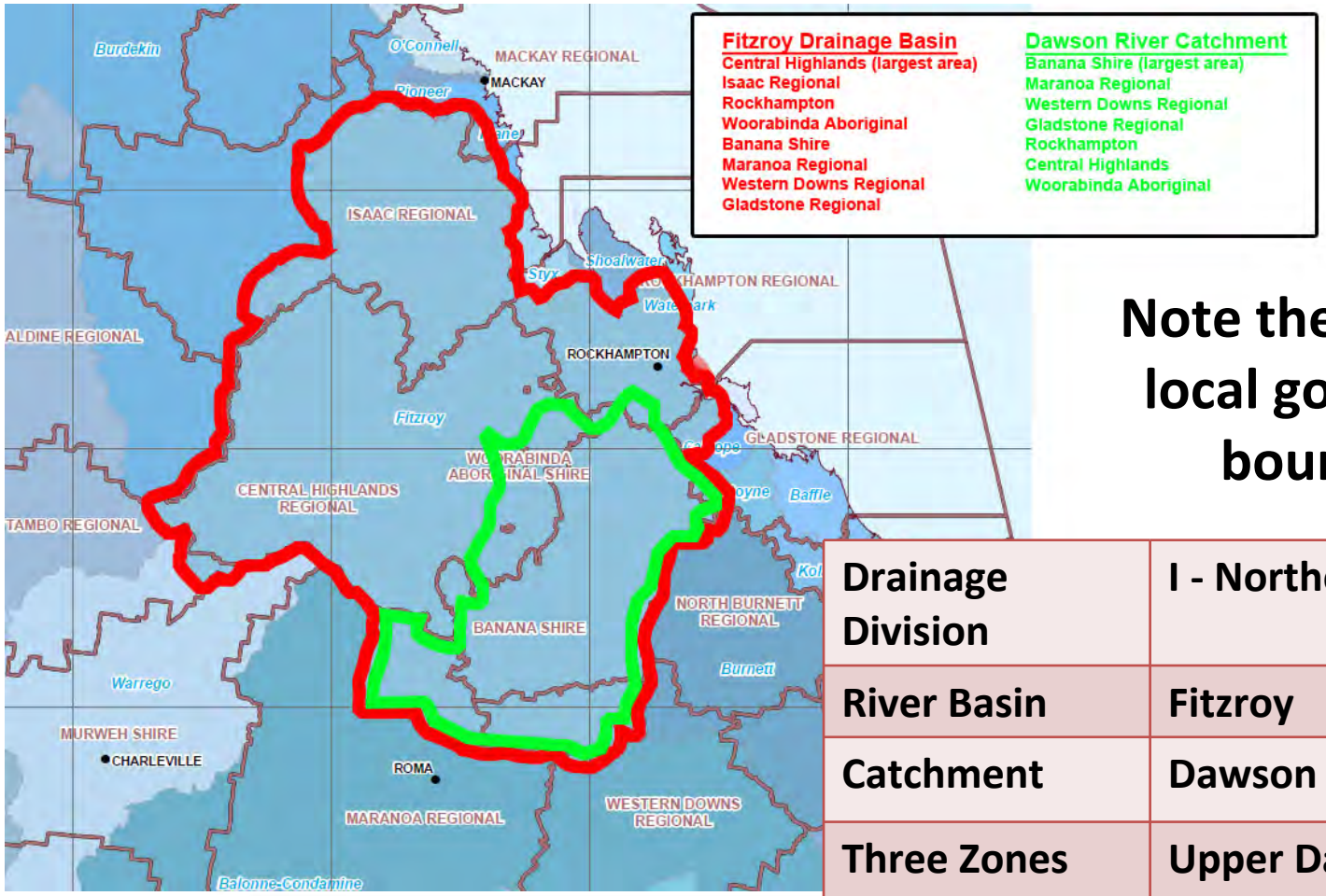
- 75 River Basins in Queensland (246 Nationally)
- Gulf of C[redacted] Basins
- North Ea[redacted] Basins
- Mur[redacted] Basins
- Bull[redacted] Basin
- Lake Eyre Division – 4 River Basins
- Banana[redacted] East Co[redacted] Basin



Fitzroy River Basin & Dawson River Catchment



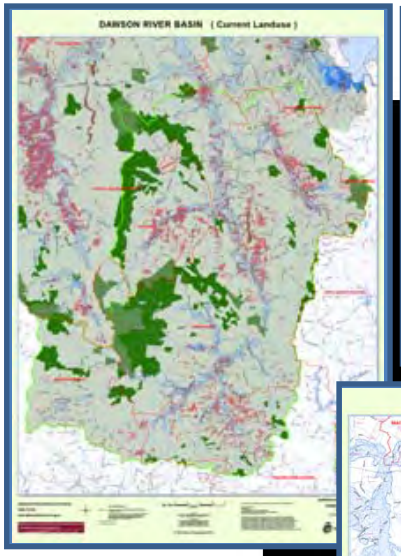
Fitzroy River Basin & Dawson River Catchment



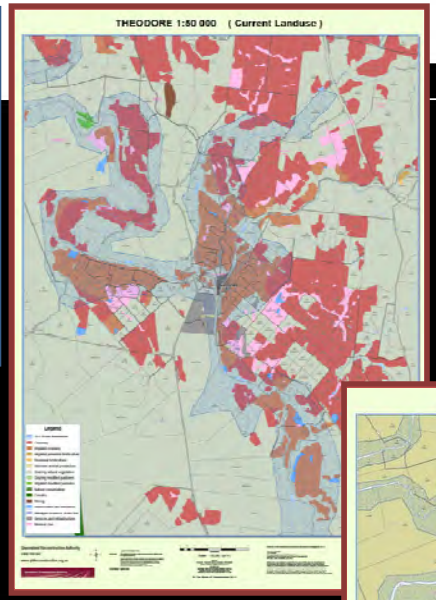
Note the overlay of local government boundaries

Drainage Division	I - Northeast Coast Division
River Basin	Fitzroy
Catchment	Dawson River Catchment
Three Zones	Upper Dawson, Lower Dawson and Don/Callide

Planning Scheme Relationship to River Basin & Catchment level Planning

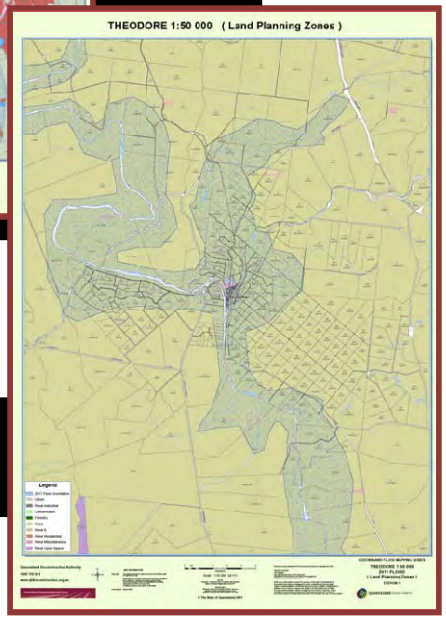


River Basin & Catchment Level Planning
- Strategic Framework
- Land Use
- Zoning

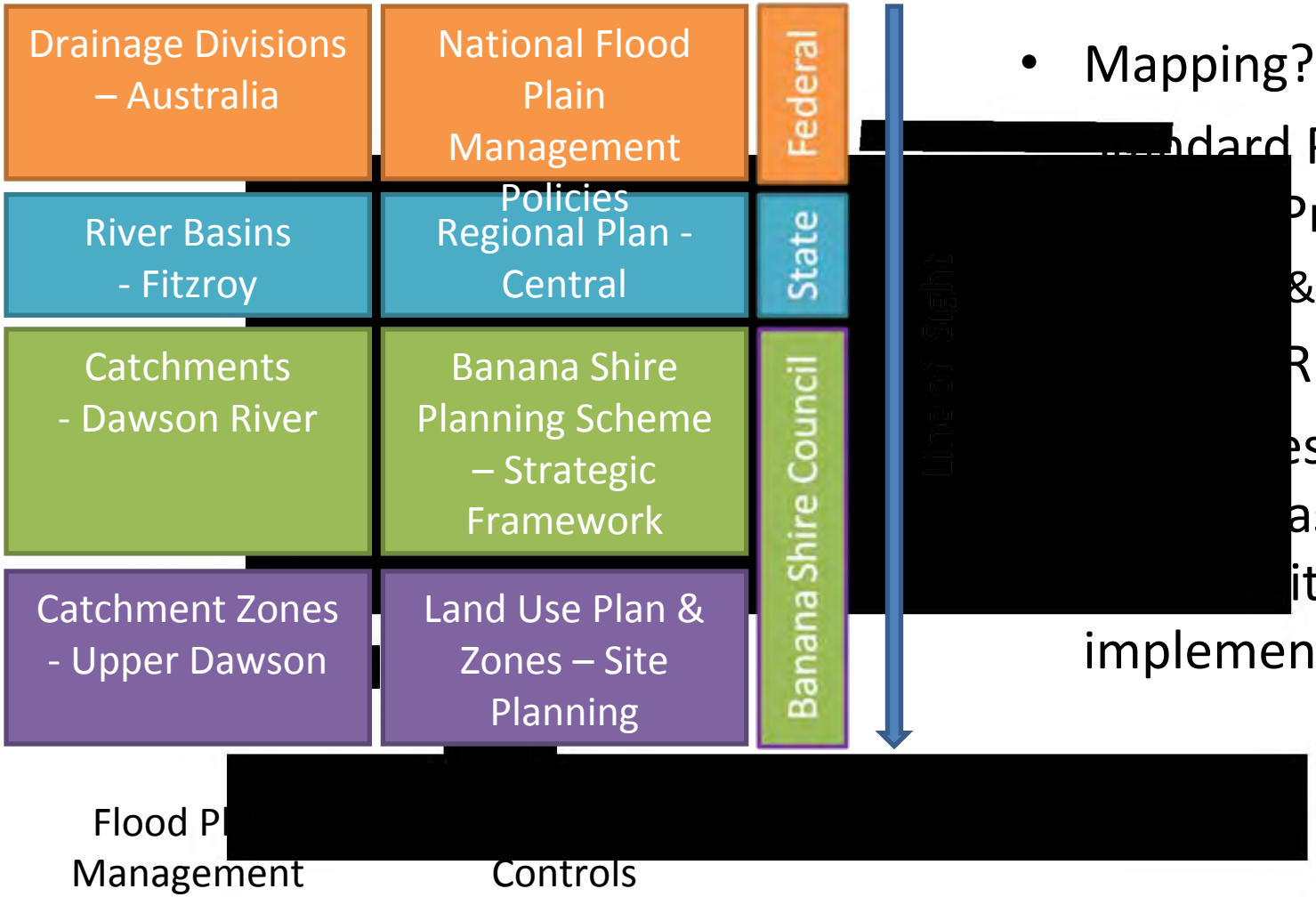


Local Area Planning derived from Basin / Catchment Planning
- Strategic Framework
- Land Use
- Zoning

River Basin & Catchment Level Planning needs to inform Local Area Planning

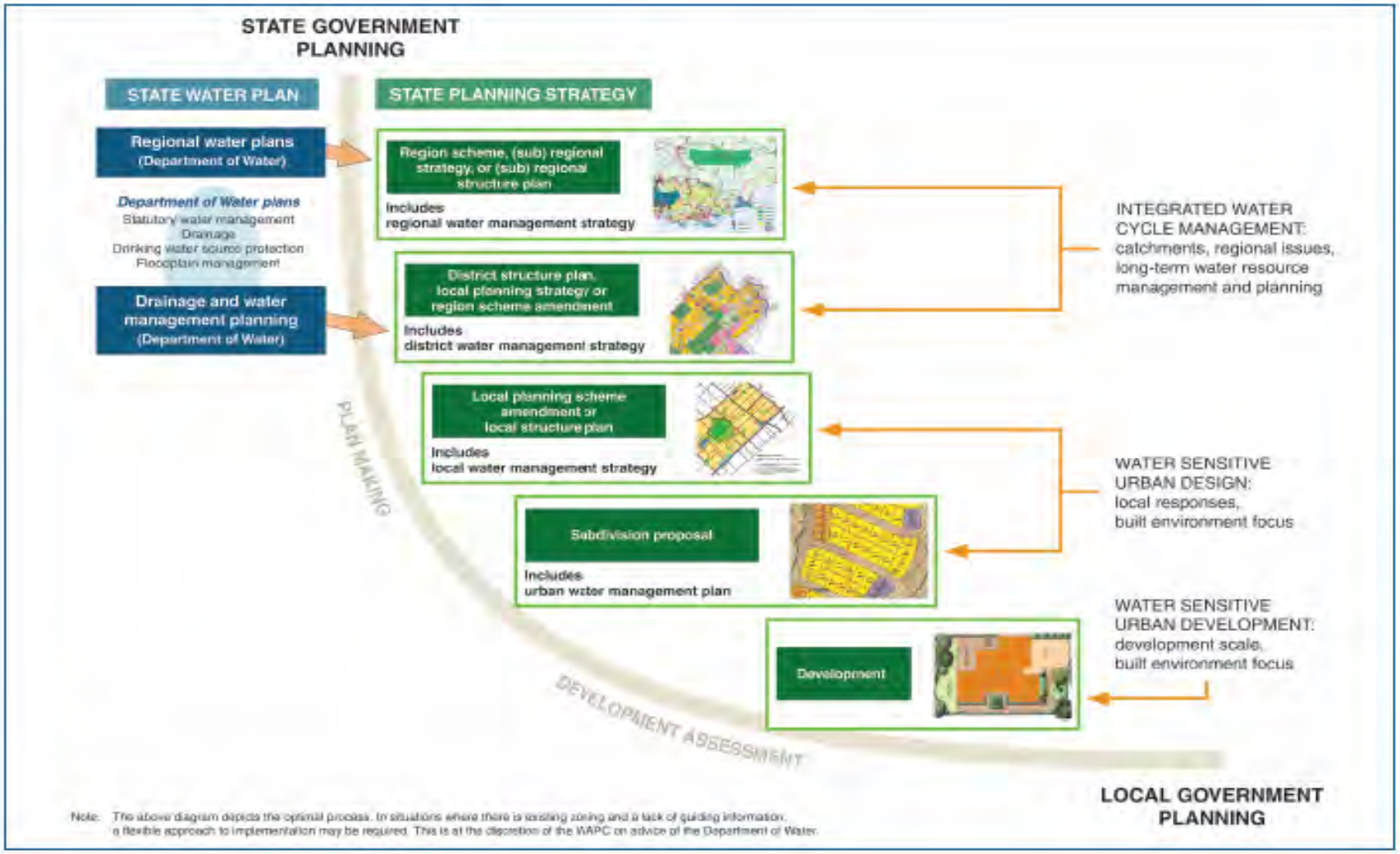


Solution Considerations

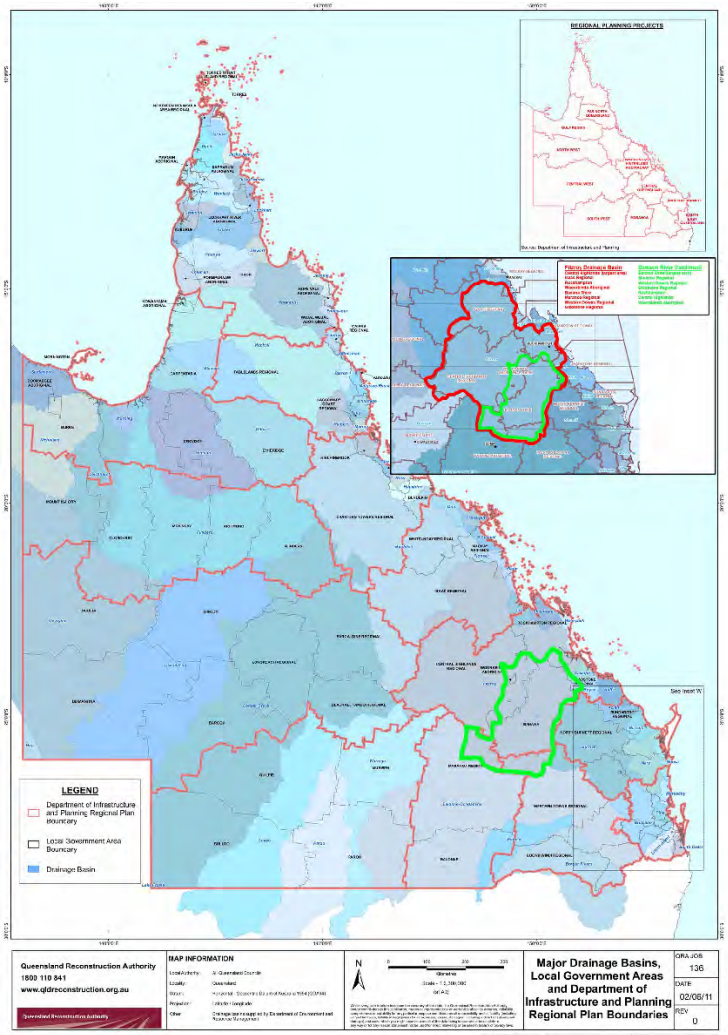


- Mapping?
- [redacted]dard Planning [redacted]Provisions [redacted]& Urban)?
- [redacted]RP / SPSP?
- [redacted]esponsible [redacted]aspect and [redacted]it be implemented?

Western Australia – Flood Plain Management



River Basins and Regional Planning Committee Areas



- 13 Regional Planning Areas in [redacted]
- [redacted] between [redacted] statutory [redacted] form Local [redacted] chemes
- [redacted] vernment – [redacted] late
- [redacted] ated in 3 Regional Planning Committee Areas – mainly in Central Queensland

[redacted]

Australian Building Code Board (ABCB)

Background

- ABCB is [redacted] ood-prone areas, w [redacted] (BCA)
- This will [redacted] land to be develop [redacted] hazard for a specific [redacted]
- The [redacted] engineers designin [redacted] d beyond just structura [redacted] ities and egress
- The draf [redacted] ard [redacted] be the subject of a national Regulation Impact Statement (RIS) process (due t [redacted] leased for consultation in late 2011) and it expected to be in [redacted] ay 2013), althoug [redacted]

Draft National Flood Standard - Buildings

Overview of key parts of the draft national Flood Standard

- The draft flood Standard will apply to ne[redacted]4, 9a and 9c building[redacted]y (e.g. Local Govern[redacted]
- Building[redacted]e designed to comply[redacted]
- The[redacted]
  - 1) ar[redacted]design the build[redacted]
  - [redacted]
- Elevatio[redacted]ors of habitable rooms, e.g. not less than 0.5m above the defined flood haza[redacted]vel
- Non-h[redacted]evel but must n[redacted]s they are open (i.e. no walls)

Draft National Flood Standard - Buildings

- *Limitations and other considerations*
- The design specifications in the draft St[redacted]ed to cases of likely fl[redacted]ve lowest [redacted] of 1.5m/s
- The ABC[redacted] the USA (FEMA)[redacted]ers these limi[redacted]one area that will still[redacted]tion practice[redacted]
- Local Governments do not currently define flow rates as part of designa[redacted]od [redacted]ne land under section 13 of the Building Regulation 2006
- Comm[redacted]

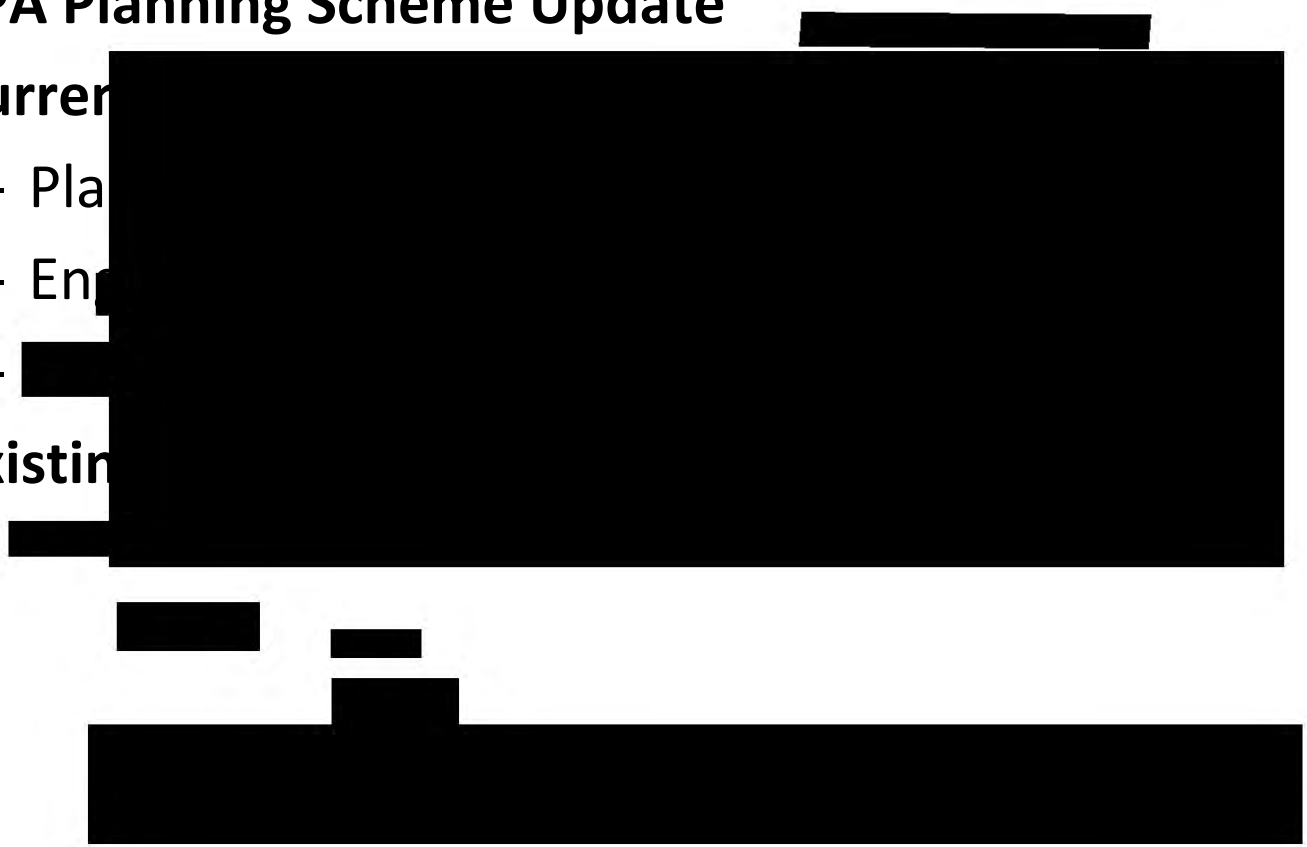
Draft National Flood Standard - Buildings

- For buildings subjected to floods with characteristics outside the scope of the desi[redacted]ust still be built to [redacted]osed upon it - an e[redacted]rst principl[redacted]
- The dra[redacted]ongoing mainte[redacted]rly inform building[redacted]gh risk dev[redacted]e areas.

[redacted]

Banana Shire Council - Update

- **SPA Planning Scheme Update**
- **Curren**
  - Pla
  - En
  -
- **Existin**



Banana Shire Council
Case Study

- **Phase 1 – Interim**
  - Floo[redacted]vel)
  - Star[redacted]
- **Phase 1[redacted]**
  - [redacted]
  - Cou[redacted]
    - **Phas[redacted]Long Term (New Planning Scheme)**
    - Council incorp[redacted]s Dawson River Flood Study – Flood Plain Ma[redacted]ning Sch[redacted]

Flood Modelling - Discussion

- Define the flooding characteristics:
  - How
  - How
  - How
  - How
- Bas
- Normal
  - Hyd
  - Hydraulic (depth and flow and time)
- Models need to b ibrated against historical flood events
- Models need to b tained to address cumulative effects of develo

Each of these will assist in determining appropriate land use planning outcomes

Hydrologic & Hydraulic Modelling

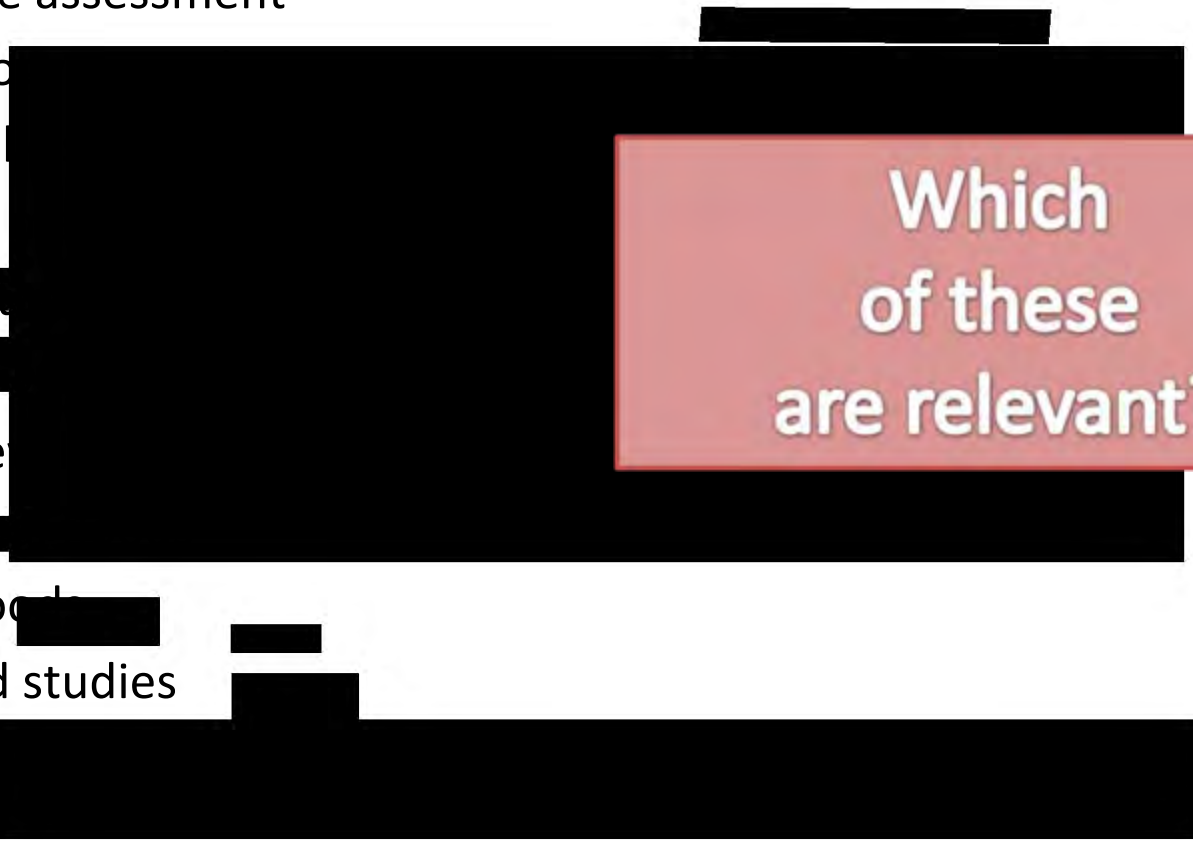
Hydrologic modelling

- Infor[redacted] of the reco[redacted] deriv[redacted]ving more
- Whe[redacted]ographic b[redacted] losse[redacted]as 1D (down runo[redacted]rcourse) or [redacted]f flow in 2 directions)

[redacted]

Geosciences Australia – Flood Study Categorisation

- Damage assessment
- Hydrolo
- Hydraul
- Hazard
- Inunda
- Ter
- Floor le
- His
- Post flo
- Related studies



Flood Modelling Output

- Based on a particular flood [redacted]ability, the [redacted]nt of [redacted]dation can be [redacted]ned and a [redacted]esponding [redacted]d map [redacted]uced
- [redacted]e flood maps can form the basis of the natural hazard [redacted]gement area (SPP1/03)

Draft National Flood Standard / New Planning Scheme considerations – Banana Shire

Proposed d

- Based o andard, some o anning any future f
  - 1) id nt or a scenario efined "flood haza ely to inundate the l
  - 2) id d event, and specification (down to property/allotment level) of the defined flood hazard level for each property
  - 3) determination ikely flow velocity of flood waters during the flood event (able to b

Flood Plain Management – Points for Discussion

- Future flood plain management plans to deal with existing flood p
- Flood
- Prior
- Extent
- Clim

ne comm

s

te Change)

sities for a given event and increased mean sea levels

Flood Hazard – Points for Discussion

- Flood Hazards are determined based on velocity of flow and flow depth
- Velocities >2m/s can scour foundations [redacted] and grass surfaces [redacted] dings (1.5m/s)
- Location [redacted] need to be consider
- Prefer [redacted]) rather than AR
- Lan [redacted] E) or Probable Maximum Flood (PMF)
- Flood Hazard zones/overlay could include – Flood Free (above PMF), Defined [redacted] ed Floodw
- Flood plain = all land up to the PMF

Resources

- **Floodplain Management in Australia** – Best Practice Principles and Guidelines – CSIRO – SCARM Report 73
- **State** Impacts of Floo viewed)
- **Queen** work and Overla schemes)
- **Queen** an stormwater systems)
- **Others ?**

Stakeholder Engagement – Banana Case Study

- **Primary**
  - Banana Shire Council
  - Que
  - Depa
  - Depa
  - Depa
- **Second**
  - Depa
  - Fitzr
  - Daw
  - Numerous Landcare Groups
  - Geos Aust
  - CSIRO
  - Riv
- **Others:**

– 2004)

Strategy 2004)

Actions and Deliverables

Action	Deliverable	Responsibility	Timeframe
1	[redacted]		
2			
3			
4			
5			
6			
7			
8			

MINUTES

MEETING: **Banana Shire Council - Flood Plain Study Workshop**
DPI Office, State Farm Road, Biloela (Booking from 9.30am to 1pm)
TIME: Workshop Commencing 10:00 AM -1:00 PM – Tuesday 14 June 2011

ATTENDEES:

Name	Organisation	Email Address
Brendan Nelson (BN)	QldRA	[redacted]
[redacted]		

APOLOGISES:

Name	Organisation	Email Address
[redacted]		

MEETING PURPOSE:

- To provide an overview of the Qld Reconstruction Authority – Flood Plain Management Project. The proposed deliverables of this project are:
  - ✓ Undertake an audit of planning schemes for selected flood affected local governments
  - Provide interim flood plain management controls and regulations for local governments not adequately protected
  - Develop standard planning scheme provisions to enable consistency in application of flood plain management controls and regulation across Queensland
  - Provide guidance and support for local government in the development of templates for flood studies as part of new planning schemes
- To work with Banana Shire Council and relevant state agencies in the development of interim and long term controls for flood plain management
- To work with and support Banana Shire Council in the preparation of a flood study to support the development of Council's new planning scheme
- To develop a guideline for local governments providing a template for the preparation of flood studies and their integration with new planning schemes

Level 9, 119 Charlotte Street Brisbane
PO Box 15428 City East
Queensland 4002 Australia
Telephone +61 7 3008 7200
Facsimile +61 7 3008 7299
www.qldreconstruction.org.au

PRESENTATION

A copy of the Authority's presentation is attached as a PDF. Given the content of the presentation, discretion of use is sought from all recipients and the Authority requests that it will not be circulated beyond the attendee list. Key messages from the presentation:-

- Given the context of the events that unfolded in summer 2010/2011 the Authority has a role and function to lead short term and long term goals including for flood plain management.
- The governance framework for managing floodplains particularly in Queensland is complex with a number of agencies and stakeholders.
- No two planning schemes currently deal with floodplain controls the same way.
- There is a need to increase the visibility and understanding on how flood management is controlled.
- The proposal will look at Banana as a case study to support the proposed interim measures, the flood study and the standard provisions to be incorporated within the new SPA scheme. These templates will then be used to support a wider roll out to assist other Councils who based on the audit are not currently adequately protected.

WORKSHOP AGREEMENTS

1. That land use planning and flood mapping must correlate.
2. That the best approach to deliver correlation is at a catchment level and not bounded by LGA boundary. For Banana Shire this means delivery of a study for the Dawson River Catchment.
3. That there is no need to reinvent the wheel and that a number of sources and previous work has been undertaken that can support and help build the accuracy of a flood map for the Dawson River Catchment.
    a. Sources of data may include Sunwater, Anglo Coal, Cockatoo, Herbarium for the wetland mapping, Fitzroy River Basin Association, Brigalow Catchment Study.
    b. TMR survey points for damaged areas
    c. Council's own assessment and mapping.
4. That an interim response by July 30 is possible subject to resources particularly in relation to mapping.
5. That the timing for the study depending on the existing data could work well with the new strategic framework for the scheme.
6. That there is a need to understand what currently exists and in what format, to further establish and define the scope for the Dawson River Catchment Study.
7. The Study will need to incorporate a fairly broad scope and include assessment of critical infrastructure, access to critical infrastructure and emergency management – (Council provided a copy of their Engineering Comments for the proposed study – refer to attached).
8. The Study will need to incorporate and consider climate change.
9. Any provisions will need to consider the context in which they are applied. This may include Urban/ Rural | Township / Rural and low growth/ high growth areas.
10. Consideration of flood mitigation in the context of the project is not confirmed and will be subject to further discussion.

ACTIONS & DELIVERABLES

Action	Deliverable	Responsibility	Timeframe
1	Coordination of collection of existing information / data sets	QRA	30 June
2	Follow up with EMQ regarding lidar survey scheduled for late 2011	QRA	24 June
3	Draft scope for flood study	Engeny	30 June
4	Produce interim Flood Hazard Management Area map for Dawson River Catchment	QRA / DERM	24 June
5	Prepare proposed interim provisions based on Dawson River as trial	PSA	30 June
6	Review immunity levels based on QPP zones	QRA/ DLGP	30 June
7	Provide key milestones on proposed new planning scheme and community plan	BSC/ DN/ JG	24 June

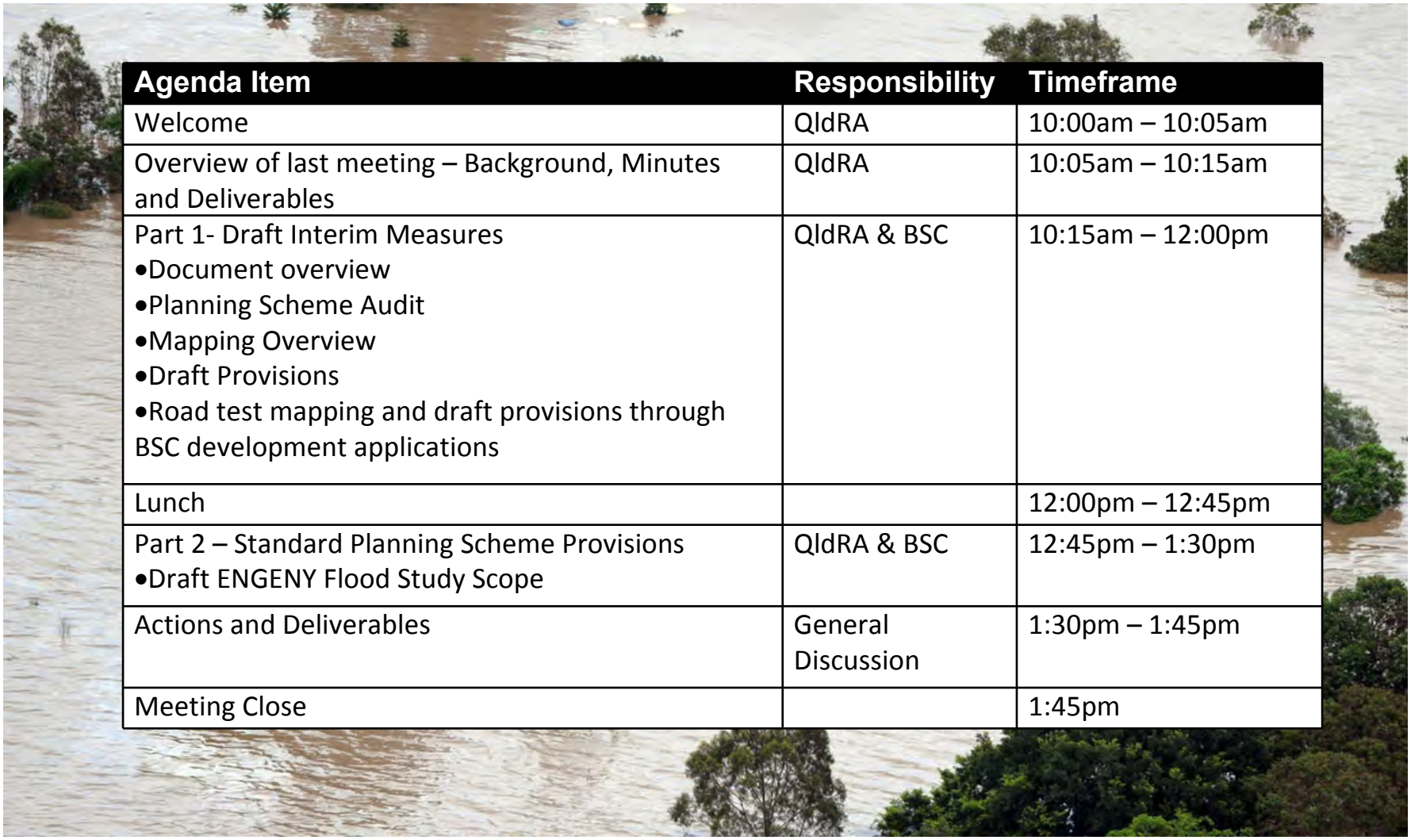
NEXT MEETING

Week commencing 11 July 2011.

Planning for stronger, more resilient floodplains

Banana Shire Council Workshop
20 July 2011

Workshop Outline

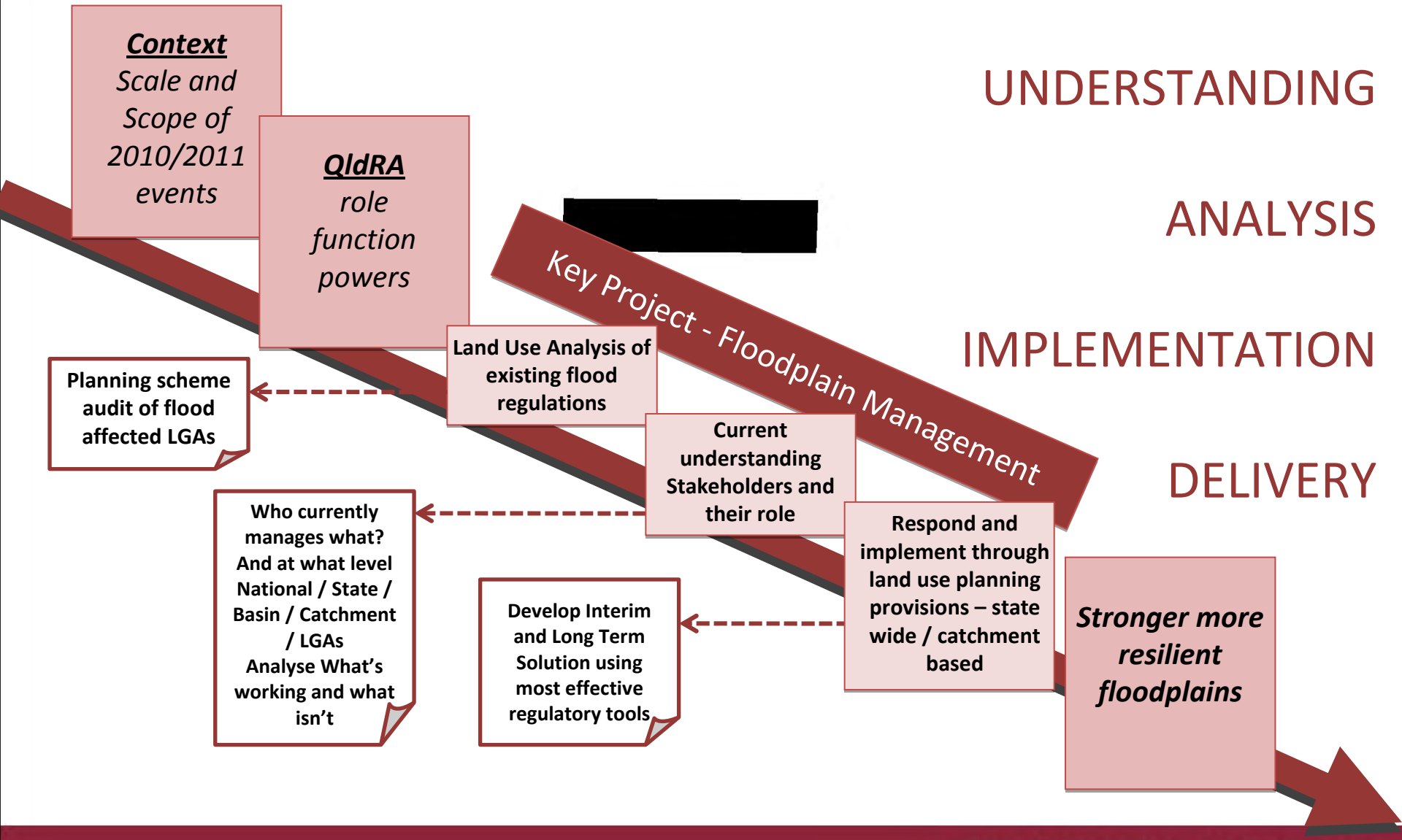


Agenda Item	Responsibility	Timeframe
Welcome	QldRA	10:00am – 10:05am
Overview of last meeting – Background, Minutes and Deliverables	QldRA	10:05am – 10:15am
Part 1- Draft Interim Measures •Document overview •Planning Scheme Audit •Mapping Overview •Draft Provisions •Road test mapping and draft provisions through BSC development applications	QldRA & BSC	10:15am – 12:00pm
Lunch		12:00pm – 12:45pm
Part 2 – Standard Planning Scheme Provisions •Draft ENGENY Flood Study Scope	QldRA & BSC	12:45pm – 1:30pm
Actions and Deliverables	General Discussion	1:30pm – 1:45pm
Meeting Close		1:45pm

Background

- 2010/2011 Summer Events unprecedented
- 91% of the State disaster activated as a result of flooding events
- 210 townships/ suburbs were af[redacted]
- 13 rivers recorded their highest [redacted]
- Total evacuation of a township, Theodore
- Critical Infrastructure was affected
  - Rockhampton airport was closed
  - water purification systems were flooded hampering clean up efforts and access to safe drinking water
  - 19,000km^2 of road requires rebuild or repair
- Damage bill from flooding impact is $5.2B
- Commission of Inquiry may require Council's who haven't done mapping to do so and to establish the predicted impact of flood levels at individual properties

Overview - Floodplain Management Project



Overview – Project Scope

Two guidelines – *Planning for a stronger, more resilient flood plain,* to assist local governments to ensure that floodplain management is addressed through land use planning including planning schemes.

[redacted]

Key deliverables:

- ***Audit of planning schemes*** across the State to determine how flooding matters are currently regulated. – ***completed.***
- ***Part 1 – Interim measures to support floodplain management in existing planning schemes,*** is an information toolkit including mapping identifying an interim floodplain assessment overlay and interim floodplain management controls to be incorporated into existing planning schemes for those local governments not adequately protected as a result of the audit – ***to be completed by 31 July 2011.***
- ***Part 2 – Standard planning scheme provisions and flood study template,*** will enable consistency in application of flood plain management controls and regulation across Queensland within new planning schemes prepared under the Sustainable Planning Act 2009 – ***to be completed by 30 September 2011.***

Overview - Flood Plain Management Project

- Management of the adverse impacts on people and property is only one aspect of flood plain management
- Existing flood plain manage[redacted]ith mainly by local government
- Difficult to enforce without a natural hazard management area being defined
- Flood plain management controls generally only deal with future development, not existing development, nor long term transition strategies for existing areas at highest risk
- Previous approaches to flood plain management have had limited success – Planning Scheme Audit results

Planning Scheme Audit

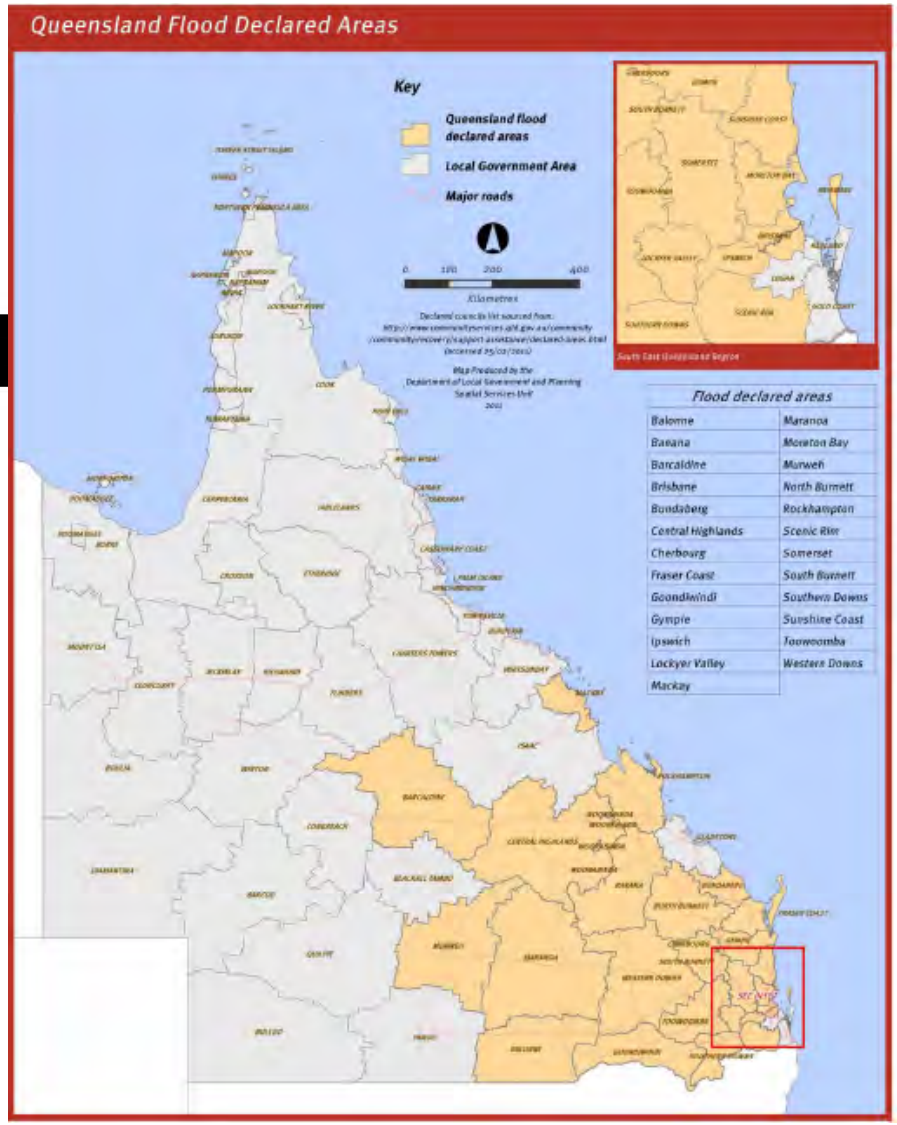
QldRA and DLGP jointly commissioned a Planning Scheme Audit by PSA Consultants

77 planning schemes have been comprehensively been reviewed – 24 Local Government Areas

The Authority reviewed the balance 50 schemes bringing the total schemes reviewed – 127

Total LGAs review – 73

Note that 16 LGAs do not have planning schemes



Planning Scheme Audit – Criteria

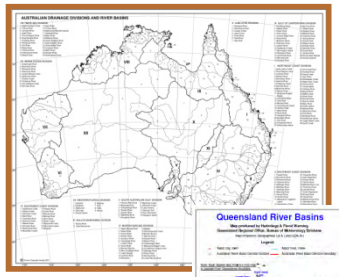
Table 2 Audit Criteria

	CRITERIA	DETAILS / QUESTION ADDRESSED	STANDARD RESPONSES
1	Local Government Areas	Local Government Area name.	
2	Planning	Statutory Planning Scheme name.	
3	Adoption Date	Date Planning Scheme was adopted by the Local Government.	
4	Flood Amendments	Based on the information available on Council's web site, did been any planning scheme amendments include flood provisions?	• Yes • No • Unknown
5	Appropriate Reflection of SPP1/03	Does the planning scheme appropriately reflect the SPP? The planning scheme expressly states that the relevant Minister was satisfied that the SPP is appropriately reflected in the planning scheme. The planning scheme does not specifically state that the Minister is satisfied that the planning scheme appropriately reflected the SPP, but the planning scheme provisions are in accordance with the requirements as outlined in Annex 4 of the SPP and Annex 5 of the SPP Guideline. It is not expressly stated in the planning scheme that the relevant Minister was satisfied that the SPP is appropriately reflected in the planning scheme and the planning scheme provisions are not in accordance with the requirements as outlined in Annex 4 of the SPP and Annex 5 of the SPP Guideline.	• Yes • Possible • No
6	Manner in which SPP1/03 is reflected.	A. The planning scheme expressly states that the relevant Minister has formally identified that the SPP has been appropriately reflected in the planning scheme. B. The planning scheme identifies a 'natural hazard management area' including land inundated by a Defined Flood Event (DFE) (SPP 5.1 and A3.1). C. The planning scheme adopts a DFE of 1% Annual Exceedance Probability (AEP) i.e. a Q100 OR alternatively the planning scheme adopts a different DFE, with adequate justification (SPP A3.2). D. The planning scheme includes the specific outcomes related to flood as outlined in the SPP Annex 4 and/or the SPP Guideline Appendix 5. E. The planning scheme is supported by a flood study (hydrologic /hydraulic/both) which defines the nature and extent of the flood hazard (SPP Guideline A2.17 – A2.20).	• A • B • C • D • E
		F. The planning scheme does not have a flood study, but is supported by an assessment of historical flood data, including historical data/interviews with long-term residents, use of older flood studies with limited scope, or dismissal of the need for a flood study as a result of topography or lack of flood history (SPP Guideline A2.21 – A2.26). G. The planning scheme contains appropriate planning strategies and development assessment measures that address flooding (for example development outcomes, overlays, specific hazard management codes, appropriate levels of assessment for development within natural hazard management areas, appropriate land uses on/near flood plain etc).	• F • G
7	Mapped Defined Flood Event	Is a defined flood event mapped and included in the planning scheme?	• Yes • No
8	Structure Plans	Are flood provisions included within any structure plans?	• Yes • No
9	Local Area Plans	Are flood provisions included within any local area plans?	• Yes • No
10	Planning Area Codes	Are flood provisions included within any planning area or zone codes?	• Yes • No
11	Use Codes	Are flood provisions contained within any specific use codes?	• Yes • No
12	Reconfiguring a Lot Codes	Are flood provisions contained within any reconfiguring a lot codes?	• Yes • No
13	Overlay Codes	Are flood provisions contained within any overlay codes?	• Yes • No
14	Planning Scheme Policies	Are flood provisions of details to support flood assessments contained within any planning scheme policies?	• Yes • No
15	Other	Are there any other provisions of the planning scheme which contain flood related provisions?	• Yes • No
16	Operational Works Code	Does the planning scheme contain an operational works code which contains provisions in relation to filling or excavation within a flood prone area?	• Yes • No
17	Overlay Code	Does a flood related overlay contain provisions in relation to filling or excavation within a flood prone area?	• Yes • No
18	Planning Scheme Policy	Does a planning scheme policy contain provisions or details to support flood assessments relevant to filling or excavation within and flood prone area?	• Yes • No
19	Other	Are there any other provisions of the planning scheme which contain flood related provisions?	• Yes • No

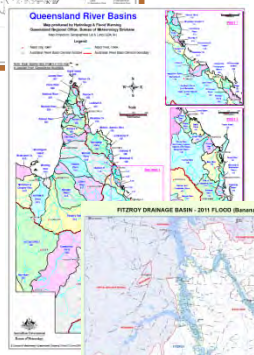
Overview - Planning Scheme Audit - Findings

- Approximately 65% planning schemes do not include any flood mapping
- Every Planning Scheme t[redacted]n Management differently
- Floodplains do not correlate with local government boundaries
- Limited public visibility of flood modelling and flood data
- Nominated flood hazard areas vary in Queensland between – Q100, Q50, highest recorded flood, Q80, specific levels, none or a combination
- Disconnect between the objectives of SPP1/03 and the implementation through current Planning Schemes

Flood Plain Management – Line of Sight



Drainage Divisions
- Australia



River Basins
- Queensland

River Basin
- Fitzroy

Catchment
- Dawson River

Often Disconnected

Land Use Planning Scheme & Local Zoning

- Before defining Interim and Long Term solutions, we need to understand and consider the existing context of Flood Plain Management in Australia

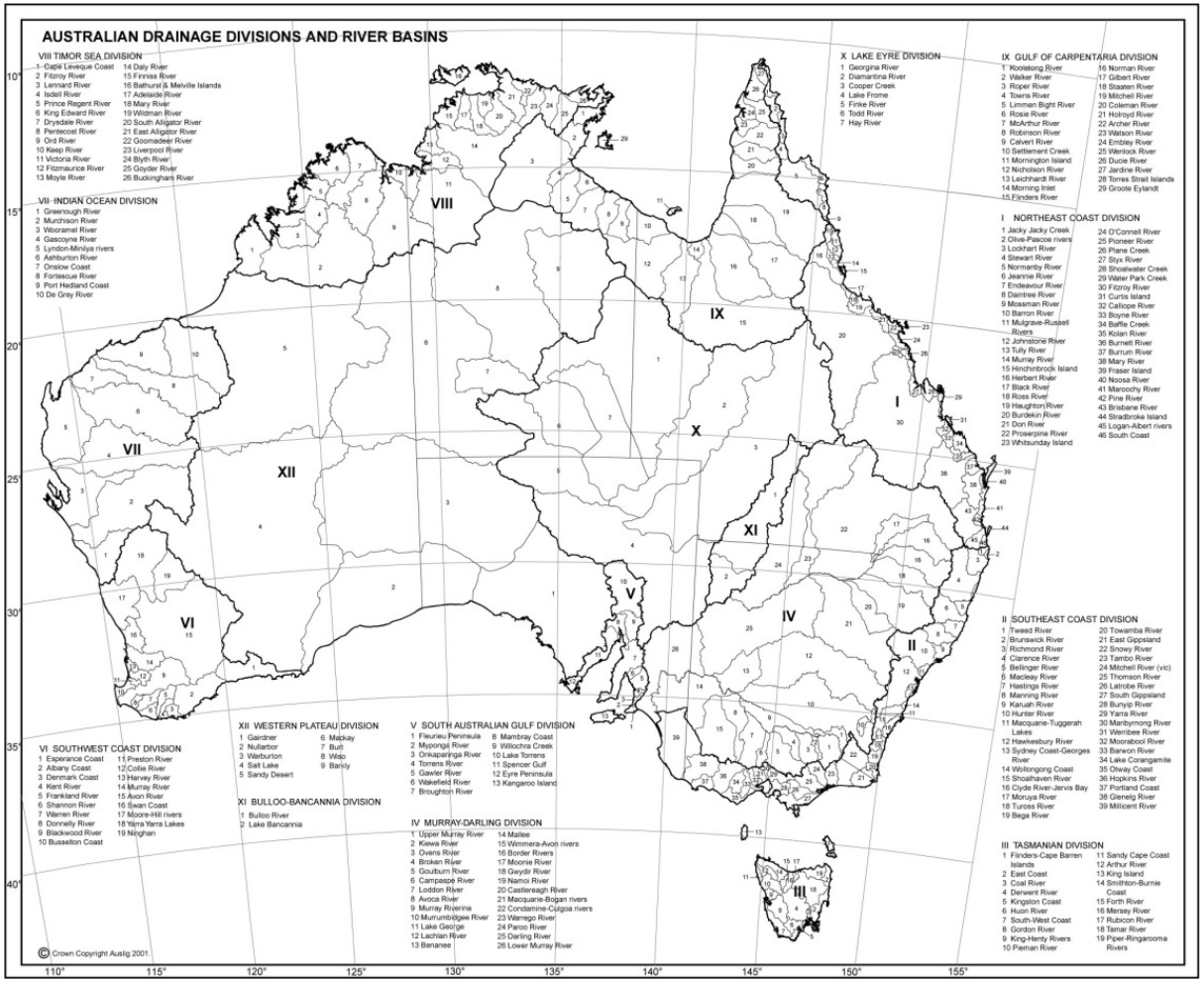
Drainage Divisions – Australia

12 Drainage Divisions and 246 River Basins across Australia

5 of the 12 National Drainage Divisions exist in Queensland

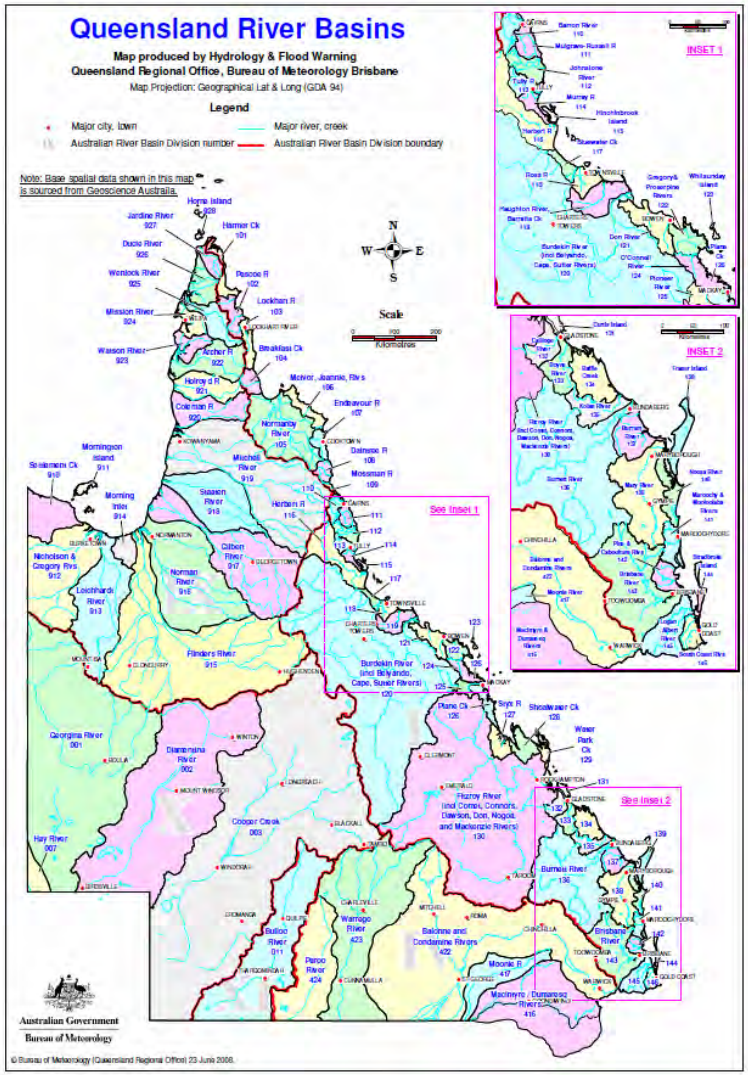
Often Complex Governance crossing state and local government borders

Different roles and responsibilities for the long term protection and management of drainage basins

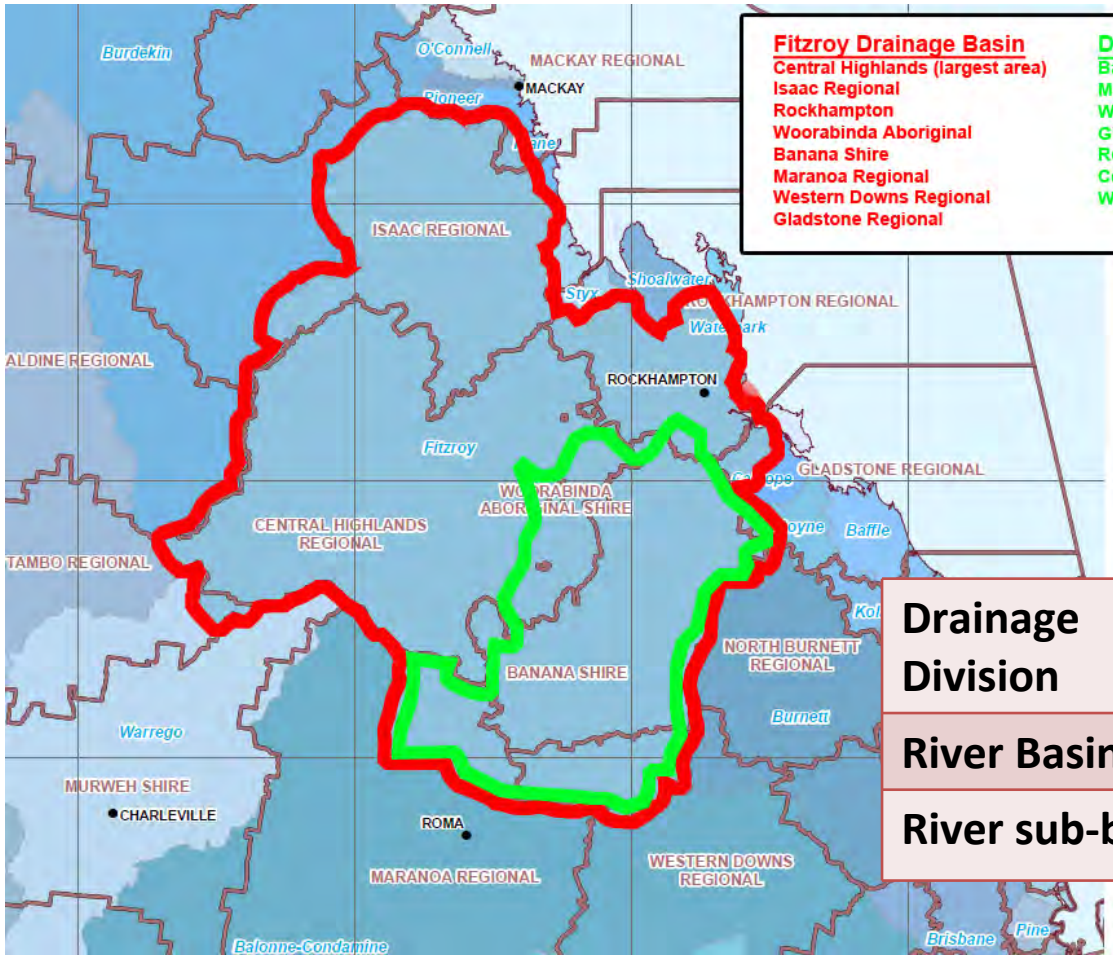


River Basins - Queensland

- 75 River Basins in Queensland (245 Nationally)
- Gulf of Carpentaria Division – 19 River Basins
- North East Coast Division – 46 River Basins
- Murray Darling Division – 5 River Basins
- Bulloo – Buncannia Division – 1 River Basin
- Lake Eyre Division – 4 River Basins
- Banana Shire is located in the North East Coast Division – Fitzroy River Basin



Fitzroy River Basin & Dawson River Catchment

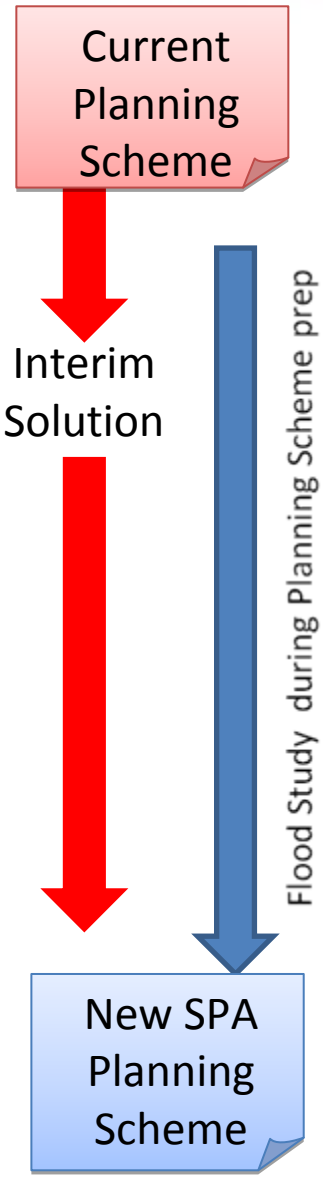


Note the overlay of local government boundaries

Drainage Division	I - Northeast Coast Division
River Basin	Fitzroy
River sub-basin	Dawson River

Solution Considerations

- Commission of Inquiry may require Council's who haven't done mapping to do so and to establish the predicted impact of flood levels at individual properties
- To do this effectively is likely [redacted] and significant resources
- Most Council's are currently preparing new SPA Compliant Planning Schemes (Part 2)
- Opportunity to align the future flood studies with the preparation of new schemes – 2/3 years for most Council's
- An interim solution is necessary for those Council's not adequately protected – as identified in the Planning Scheme Audit process (Part 1)

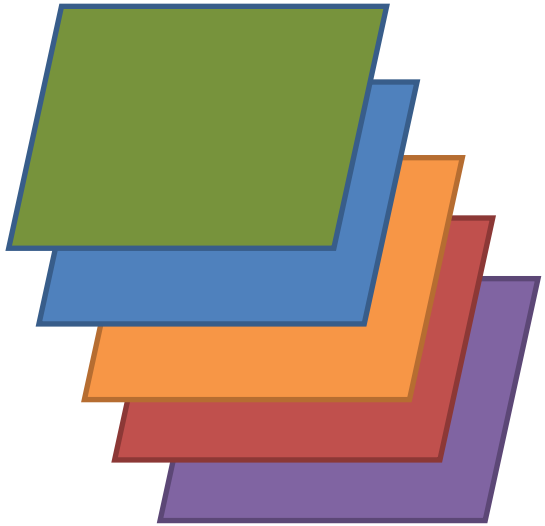


PART 1 - Mapping Overview

The *Interim Floodplain Assessment Overlay* was derived from overlaying available state-wide information sources, including:

•The best available drainage location information (typically 1:100,000 or 1:250,000)[1]
•A standard drainage classification system to [redacted]s of importance
•The best available contour information (typically 10 metre contours)[2]
•The best available satellite imagery (typically Landsat 5)
•Where other datasets exist and can aid visual interpretation, the following will be used:

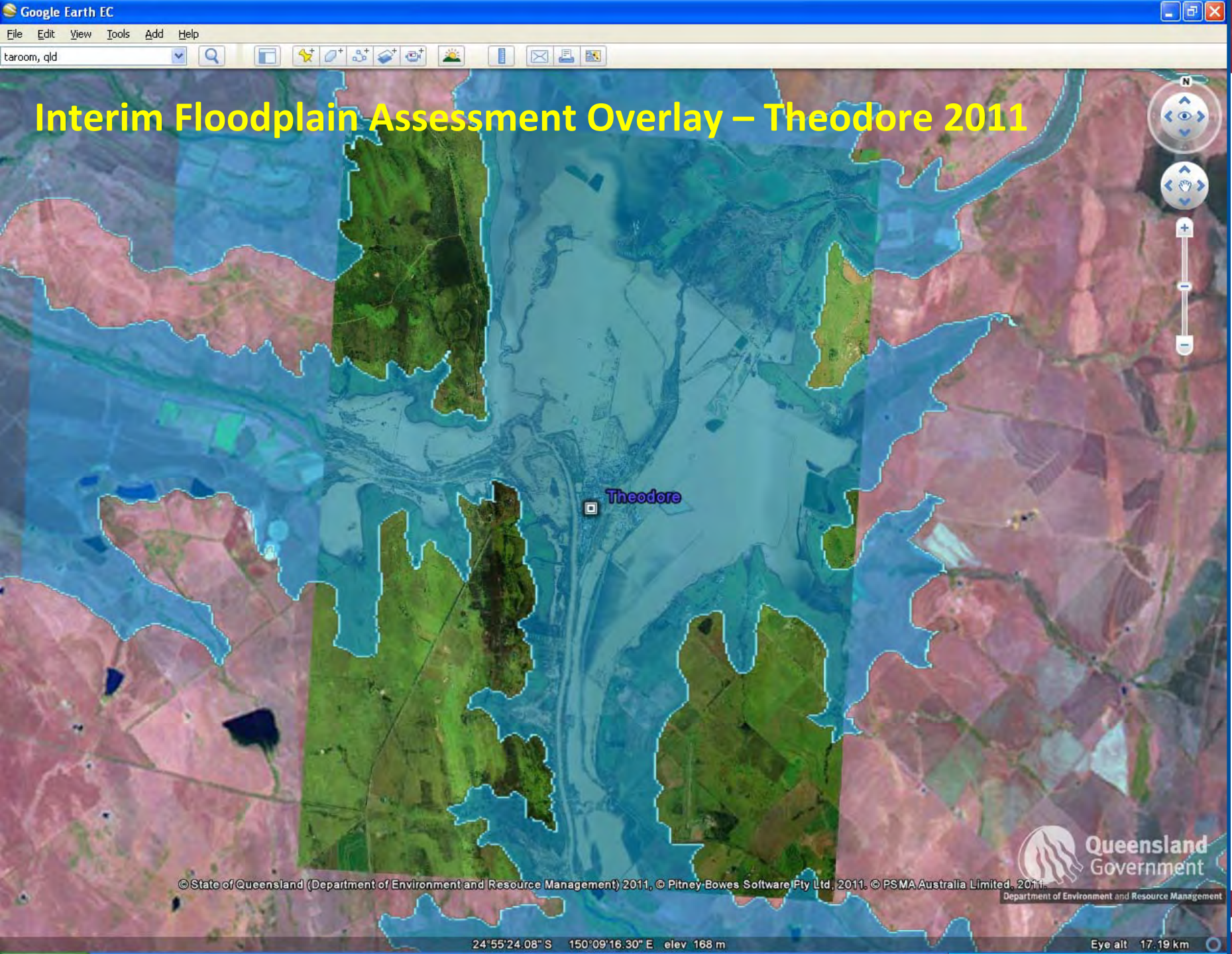
- Datasets which provide evidence of historical flooding.
  - Interpreted or actual flood information from 2010/2011 events
  - DERM gauging station information http://watermonitoring.derm.qld.gov.au/host.htm
- Other data layers as available over the various drainage basins or river sub-basins to provide further informative information for visual interpretation:
  - Pre-clear Vegetation Mapping of Landzone 3 (Alluvium) and Landzone 1 Estuarine) and SALI Soil Flooding Limitation Mapping



DERM will provide the product to local authorities and make available (subject to any licensing conditions under which the department acquired the data) the datasets used in the interpretation to assist LGA's.


Google Earth EC
File Edit View Tools Add Help
taroom, qld
Aerial Photography – Theodore 2011
Theodore
© State of Queensland (Department of Environment and Resource Management) 2011, © Pitney Bowes Software Pty Ltd, 2011, © PSMA Australia Limited, 2011.
Queensland Government
Department of Environment and Resource Management
Imagery Dates: Jan 1, 1990 - Jan 1, 2011
24°56'51.35" S 150°04'44.83" E elev 140 m
Eye alt 17.19 km

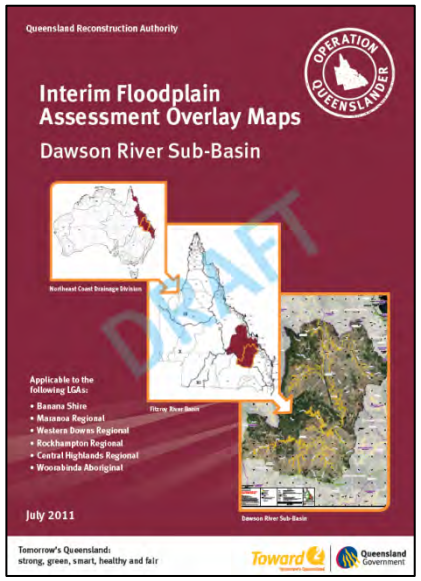

Google Earth EC
File Edit View Tools Add Help
taroom, qld
Interim Floodline– Theodore 2011
Theodore
© State of Queensland (Department of Environment and Resource Management) 2011. © Pitney Bowes Software Pty Ltd. 2011. © PSMA Australia Limited. 2011.
Queensland Government
Department of Environment and Resource Management
Imagery Date: Jan 1, 1999
24°56'51.35" S 150°04'44.83" E elev 141 m
Eye alt 17.19 km

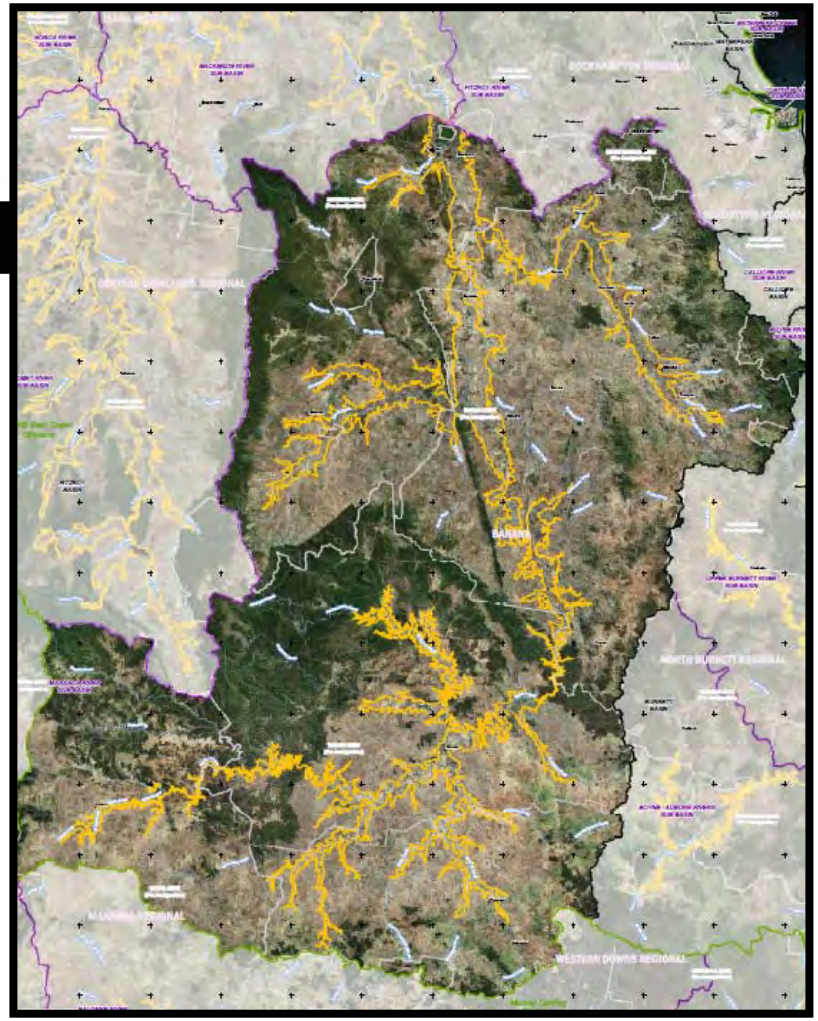

Google Earth EC
File Edit View Tools Add Help
taroom, qld
Interim Floodplain Assessment Overlay – Theodore 2011
Theodore
© State of Queensland (Department of Environment and Resource Management) 2011, © Pitney Bowes Software Pty Ltd, 2011, © PSMA Australia Limited, 2011.
Queensland Government
Department of Environment and Resource Management
24°55'24.08" S 150°09'16.30" E elev 168 m
Eye alt 17.19 km

Interim Floodplain Assessment Overlay – Dawson River sub-basin

Around 2300 properties within the Banana LGA within the overlay area:

Around 2850 properties across the whole Dawson River sub-basin within the overlay area





Interim Floodplain Assessment Overlay – Theodore

Example provisions:-
Operational Works - Filling and Excavation

AO1. Works do not involve any physical alteration to a watercourse or floodway including vegetation clearing; or net filling exceeding 50 cubic metres below the IFAL.

AO2. Where filling, excavation or physical alteration to a watercourse, flood way or flow path is proposed on land below the IFAL the works are designed with regard for the following measures:
•Works do not result in a reduction of on-site flood storage capacity and contain within the site any changes to depth, duration, velocity of flood waters of all floods up to and including the IFAL.*
•Works do not change the characteristics of flood water of all floods up to an including the IFAL in ways that result in:
- loss of/changes to flow paths;
- acceleration or retardation of flows; or
any reduction in flood warning times elsewhere on the floodplain.
**Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Interim measures to support floodplain management in planning schemes

Implementation Strategy

Step 1 - Interim Floodplain Assessment Overlay
•Proposed interim mapping and overlay code
•Councils can choose to adopt as is or revise based on their own review or additional data

Step 2 – Interim Floodplain Assessment Level
•Councils adopt a new interim flood level having regarding to flooding events within the LGA

Step 3 – Planning Scheme Amendment
•Council resolves to adopt interim flood assessment overlay maps, adopt interim floodplain assessment level and resolves to amend existing planning schemes to include the overlay code and mapping.

PART 1 - Draft Provisions

REFER TO HANDOUT

INTERIM FLOODPLAIN ASSESSMENT CODE [redacted]

Application

- *This Code will apply in assessing any assessable development where on land wholly or partially within the area shown on the Interim Floodplain Assessment Overlay Maps.*

Performance Outcomes and Acceptable Outcomes

Current Categories

1. **Material Change of Use (Residential)**
2. **Material Change Of Use (Non-Residential)**
3. **Material Change of Use (Community Infrastructure)**
4. **Reconfiguration Of A Lot (Residential Subdivision)**
5. **Reconfiguration Of A Lot (Non-Residential Subdivision)**
6. **Operational Work (Filling and Excavation)**

PART 1 - Road test – Draft Provisions and Mapping

Banana Shire Council recent Development Applications [redacted]

- Issues
- Workability
- Legibility
- Complexity

Lunch Break

[redacted]

PART 2 – Standard Planning Scheme Provisions

- Discussion
- Draft ENGENY Flood Study Scope vs SCARM Template Flood Study Scope

Actions and Deliverables

Action	Deliverable	Responsibility	Timeframe
1	[redacted]		
2			
3			
4			
5			
6			
7			
8			

Timeframes

20 July 2011	Me[redacted]st interim provisions and mapping
1 August 2011	Mapbooks for priority areas finalised
1 August 2011	Part 1 guideline finalised (in draft) to accompany mapbooks
30 September 2011	Part 2 guideline finalised (in draft) for consultation

DRAFT DISTRIBUTED AT BANANA WORKSHOP. 20.07.2011

DEFINITIONS

TERM	DEFINITION
Assessable Development	As defined in the *Sustainable Planning Act 2009*.
Australian Height Datum (AHD)	The Australian Height Datum (AHD) is the reference level for defining reduced levels adopted by the National Mapping Council of Australia. The level of 0.0 m AHD is approximately mean sea level.
Annual exceedance probability (AEP)	The likelihood of occurrence of a flood of a given size or larger in any one year; usually expressed as a percentage. For example, if a peak flood discharge of 500 cubic metres per second has an AEP of 5%, it means that there is a 5% risk (i.e. probability of 0.05 or a likelihood of 1 in 20) of a peak flood discharge of 500 cubic metres per second or larger occurring in any one year. The AEP of a flood event gives no indication of when a flood of that size will occur next.
Building Work	As defined in the *Sustainable Planning Act 2009*.
Community Infrastructure	Infrastructure that provides services vital to the wellbeing of the community including: • police and emergency services facilities including emergency shelters. • hospitals and associated institutions. • facilities for the storage of valuable records or items of cultural or historic significance. • State-controlled roads. • railway lines, stations and associated facilities. • telecommunication facilities • aeronautical facilities. • communication network facilities. • utility installation • works of an electricity entity under the Electrical
Development	Is any of the following (as defined in the *Sustainable Planning Act 2009*): • carrying out building work. • carrying out plumbing or drainage work. • carrying out operational work. • reconfiguring a lot. • making a material change of use of premises.
Defined Flood Event (DFE)	The defined flood event adopted by a local government for the management of development in a particular locality. The DFE is generally not the full extent of the flood-prone land
Evacuation Routes	A path of travel from: • any place in the development, through a final exit of the development to a place of safety outside the Interim Floodplain Assessment Area Overlay; or • a common area of the development to a place of safety outside the flood affected area.
Filling and Excavating	Development for the purposes of QPP Definitions
Floodplain	The floodplain is determined as the extent of land inundated by the Probable Maximum Flood (PMF).
Flood Resilient Materials	TBA

Flood Study	TBA
Flood Risk Management Plan	TBA
Hazardous Materials in Bulk	Hazardous materials as defined in the *Dangerous Goods Safety Manogement Act 2001* in quantities that: • would be equivalent to or exceed the minimum quantities set out to determine a Large Dangerous Goods Location in the Dangerous Goods Safety Management Regulation; or • would require a licence for a magazine for the storage of an explosive under the *Explosives Regulation 1955*.
Interim Floodplain Assessment Area	The area shown on the Interim Floodplain Assessment Maps prepared by teh Qld RA.
Interim Floodplain Assessment Level Level (IFAL)	A height (expressed in metres and referenced to the Australian Height Datum) adopted by resolution of Council for a particular locality for the purpose of applying the Interim Floodplain Assessment Code.
Interim Floodplain Assessment Code (IFAC)	The Model Interim Flood Plain Assessment Code prepared by the Qld RA.
Interim Floodplain Assessment Overlay (IFAO)	An Overlay map prepared by Council and used as a trigger for the assessment of Assessable Development against the Interim Floodplain Assessment Code.
Reconfiguring a Lot	As defined in the *Sustainable Planning Act 2009*.
Residential	Development for any of the following purposes*: • Caretakers Accommodation • Child Care Centre • Community Residence • Correctional Facility • Dual occupancy • Dwelling House • Dwelling Unit • Home Based Business • Hostel • Hotel (where including Accomodatioon) • Multiple Dwelling • Non-resident Workforce Accommodation • Relocatable Home Park • Residential Care Facility • Retirement Facility • Short-term Accommodation • Tourist Park * As defined in the Queensland Planning Provisions.
Non-Residential	Development for any of the following purposes*: • Adult Shop • Agricultural Supplies Store • Animal Keeping • Aquaculture • Bulk Landscape Supplies • Car park • Club • Community Care Centre • Community Use • Crematorium • Educational Establishment • Food and Drink Outlet • Function Facility • Funeral Parlour

	• Garden Centre • Hardware and Trade Supplies • Health Care Services • High Impact Industry • Hotel (where not including accommodation) • Indoor Sport and Recreation • Intensive Animal Industry • Low Impact Industry • Major Sport and Recreation and Entertainment Facility • Medium Impact Industry • Nightclub • Noxious and Hazardous Industry • Office • Outdoor Sales • Place of Worship • Research and Technology Industry • Rural Industry • Service Industry • Service Station • Shop • Shopping Centre • Showroom • Theatre • Tourist Attraction • Veterinary services • Warehouse • Waterfront and Marine Industry • Wholesale Nursery • Wind Farm • Winery * As defined in the Queensland Planning Provisions.
Operational Work	As defined in the *Sustainable Planning Act 2009*.
Probable Maximum flood (PMF)	The largest flood that could reasonably occur at a particular location, resulting from the probable maximum precipitation. The PMF defines the extent of flood-prone land. Generally, it is not physically or financially possible to provide general protection against this event.
Queensland Reconstruction Authority (QldRA)	Body established in accordance with the provisions of the *Queensland Reconstruction Authority Act 2011*.

SCHEDULE 1 –INTERIM FLOODPLAIN ASSESSMENT CODE

Material Change of Use (Residential)

1. Application

This Code will apply in assessing any assessable development where on land wholly or partially within the area shown on the Interim Floodplain Assessment Overlay Maps.

2. Purpose

The purpose of the code is to ensure suitable measures are adopted by development in areas potentially at risk of flooding to ensure that development:

- *maintains the safety of people on the site from flooding;*
- *is designed, located and constructed to reduce the potential for damage to the structure and contents; and*
- *does not increase the potential for flood damage on site any other property.*

3. Performance Outcomes and Acceptable Outcomes

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Development: • maintains the safety of people on the site from flooding; • is designed, located and constructed to reduce the potential for damage to the structure and contents; and • does not increase the potential for flood damage on site and/or any other property.	AO1. Where possible, Development is sited located on land above the IFAL. AO2. Where it is not possible to locate development on land above the IFAL, Development is designed with regard for the following measures: **Siting and Design** • Development is sited, designed and constructed, so that the floor level of habitable rooms is located at least 0.3m above the IFAL. • Enclosed spaces below the IFAL have openings or vents that are at least 1% of the enclosed area (minimum width of 75mm) to enable automatic exit of flood water and balance external water pressure. • Development is oriented, designed and constructed to withstand the force of flowing floodwaters, including debris and buoyancy forces.* • Development will not result in increased flooding or damage to other properties. * **Building Materials** • Building Work below the IFAL uses Flood Resilient Materials. **Urban Services** • Any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by flood water (e.g. electrical switchgear and motors, water supply pipeline air valves) are located above the IFAL or designed and constructed to exclude floodwater intrusion / infiltration. • Infrastructure is designed and constructed to withstand the force of flowing floodwaters, including debris and buoyancy forces. **Ground Floor & Foundations** • Where possible, the ground floor is raised to provide protection from local overland flooding and ponding. • Footings and foundations are designed to withstand potential flood inundation, hydraulic forces and the impact from flow velocities as well as erosion and deferential settlement.* • Where using slab on ground construction, techniques such as deep building footings and bored piers are utilised to minimise the risk of

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
	undermining from flood waters.* **Walls** • Structural walls are designed to withstand the force of flowing flood waters, rising groundwater levels and the impact of debris. * • Cavity walls below the IFAL are avoided or designed to ensure adequate ventilation for drying and ease of access for cleaning. • External walls are constructed of strong and easily repaired materials. • Non-absorbent insulation is used for insulation in walls below the IFAL. **Filling and Retaining Walls** • Filling, excavation or retaining works do not cause stormwater to be concentrated or redirected from predevelopment conditions, unless stormwater is directed to a lawful point of discharge.* • Adequate scour protection is provided to exposed areas, including embankments. • Retaining walls are set back at least half the height of the wall from any boundary of the site. • Retaining walls over 1.5 metres are steeped 0.75m for every 1.5 m in height terraced and landscaped. **Ancillary Structures** • Water tanks, sheds and other ancillary structure are anchored of restrained to resist the impact from debris, floodwaters and buoyancy factors. **Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Material Change Of Use (Non-Residential)

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Development: • maintains the safety of people on the site from flooding; • is designed, located and constructed to reduce the potential for damage to the structure and contents; and • does not increase the potential for flood damage on site and/or any other property.	AO1. Where possible, Development is sited located on land above the IFAL. AO2. Where it is not possible to locate development on land above the IFAL, Development is designed with regard for the following measures: **Siting and Design** • Where possible, development is sited, designed and constructed, so that the finished floor level of habitable rooms is located at least 0.3m above the IFAL. • Where it is not possible to construct the finished flood level above the IFAL, a minimum of 30% of the gross floor area of the building is at least 500 mm above the IFAL for the storage of goods in the times of flood. • Enclosed spaces below the IFAL have openings or vents that are at least 1% of the enclosed area (minimum width of 75mm) to enable automatic exit of flood water and balance external water pressure. • Development is oriented, designed and constructed to withstand the force of flowing floodwaters, including debris and buoyancy forces.* • Development will not result in increased flood hazard or damage to other properties. * **Building Materials** • Building Work below the IFAL uses Flood Resilient Materials. **Urban Services & Infrastructure** • Any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by flood water (e.g. electrical switchgear and motors, water supply pipeline air valves) are located above the IFAL or designed and constructed to exclude

	floodwater intrusion / infiltration. • Infrastructure is designed and constructed to withstand the force of flowing floodwaters, including debris and buoyancy forces forces as a result of inundation by the floodwater. • On-site waste water treatment and disposal systems shall be located to avoid impairment to them or contamination from them during flooding. **Walls** • Structural walls are designed to withstand the force of flowing flood waters, rising groundwater levels and the impact of debris. * **Foundations** • Footings and foundations are designed to withstand potential flood inundation, hydraulic forces and the impact from flow velocities as well as erosion and deferential settlement.* • Where using slab on ground construction, techniques such as deep building footings and bored piers are utilised to minimise the risk of undermining from flood waters.* **Retaining Walls** • Filling, excavation or retaining works do not cause stormwater to be concentrated or redirected from predevelopment conditions, unless stormwater is directed to a lawful point of discharge. • Adequate scour protection is provided to exposed areas, including embankments. **Evacuation Routes** • There is at least one evacuation route that remains passable for emergency evacuations during all floods up to and including the IFAL or the premises are located in an area where there is sufficient flood warning time to enable safe evacuation. • An evacuation plan for users of the development is prepared and maintained throughout the life of the development. **Storage of Materials** • The manufacture or storage in bulk of Hazardous Materials takes place above the IFAL. • Structures used for the manufacture or storage of hazardous materials in bulk are designed to prevent the intrusion of floodwaters. • Provision is made for the safe storage and / or timely removal of goods, materials, plant and equipment in the event of a flood. **Fencing** • Fencing must be permeable to allow the passage of flood flows (minimum 90% void space), or be collapsible under flood flow (e.g. timber palings). **Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Material Change of Use (Community Infrastructure)

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Community infrastructure is able to function effectively during and immediately after flood events.	AO1. Community Infrastructure is not located on land within the IFAO. AO2. Where it is not possible to locate Community Infrastructure outside the IFAO, development does not increase the number of people living, working or accommodated on the site and Development is designed with regard for the

	following measures: **Siting and Design** • Where possible, development is sited, designed and constructed, so that the finished floor level of habitable rooms is located at least 0.3m above the IFAL. • Enclosed spaces below the IFAL have openings or vents that are at least 1% of the enclosed area (minimum width of 75mm) to enable automatic exit of flood water and balance external water pressure. • Development is oriented, designed and constructed to withstand the force of flowing floodwaters, including debris and buoyancy forces.* • Development will not result in increased flood hazard or damage to other properties. * **Building Materials** • Building Work below the IFAL uses Flood Resilient Materials. **Urban Services & Infrastructure** • Any components of the infrastructure that are likely to fail to function or may result in contamination when inundated by flood water (e.g. electrical switchgear and motors, water supply pipeline air valves) are located above the IFAL or designed and constructed to exclude floodwater intrusion / infiltration. • Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the floodwater. • On-site waste water treatment and disposal systems shall be located to avoid impairment to them or contamination from them during flooding. **Walls** • Structural walls are designed to withstand the force of flowing flood waters, rising groundwater levels and the impact of debris. * **Foundations** • Footings and foundations are designed to withstand potential flood inundation, hydraulic forces and the impact from flow velocities as well as erosion and deferential settlement.* • Where using slab on ground construction, techniques such as deep building footings and bored piers are utilised to minimise the risk of undermining from flood waters.* **Retaining Walls** • Filling, excavation or retaining works do not cause stormwater to be concentrated or redirected from predevelopment conditions, unless stormwater is directed to a lawful point of discharge. • Adequate scour protection is provided to exposed areas, including embankments. **Evacuation Routes** • There is at least one evacuation route that remains passable for emergency evacuations during all floods up to and including the IFAL or the premises are located in an area where there is sufficient flood warning time to enable safe evacuation. • An evacuation plan for users of the development is prepared and maintained throughout the life of the development. **Storage of Materials** • Provision is made for the safe storage and / or timely removal of goods, materials, plant and equipment in the event of a flood. **Fencing** • Fencing must be permeable to allow the passage of flood flows (minimum

	90% void space), or be collapsible under flood flow (e.g. timber palings). **Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Reconfiguration Of A Lot (Residential Subdivision)

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Development: • maintains the safety of people on the site from flooding; • is designed, located and constructed to reduce the potential for damage to the structure and contents; and • does not increase the potential for flood damage on site any other property.	AO1. There is no increase in the number of allotments below the IFAL. AO2. Where an increase in the number of lots is proposed below the IFAL, lots are designed with regard for the following measures: **Building Envelopes** • Lots include a 15 x 15m Building Envelope a minimum of 0.5m above the IFAL. • Where building pads are used to elevate the building envelope, they are a maximum height of 2m above the finished ground level. • Where Building Envelopes that are not 0.5m above the IFAL, the lots enable the construction of a residential dwelling with: – A minimum habitable floor level of 0.5m above the IFAL; and – A maximum habitable floor level height of 4.0m above finished ground level; and – A maximum dwelling height of 8.5m. **Evacuation Routes** • There is at least one road evacuation route that remains passable for emergency evacuation during all floods events up to the IFAL, or the site is located in an area where there is sufficient flood warning time to enable safe evacuation. **Conveyance** • Subdivision is designed to ensure conveyance of flood waters through the site **Utilities and Utility Installations** • Any components of the urban infrastructure that are likely to fail to function or may result in contamination when inundated by flood water required to service the proposed lots are located above the IFAL or designed and constructed to exclude floodwater intrusion / infiltration. • Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the floodwater. • On-site waste water treatment and disposal systems shall be located to avoid impairment to them or contamination from them during flooding. **Upstream and Downstream Impacts** • Development does not result in a reduction of on-site flood storage capacity and contains within the subject site any changes to depth, duration, velocity of flood waters of all floods up to and including the IFAL. • The development does not change the flood characteristics of flood waters up to the IFAL outside the site in ways that result in the: – loss of flood storage; – loss of or changes to flow paths; – acceleration or retardation of flows; or – any reduction in flood warning times elsewhere on the floodplain. **Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Reconfiguration Of A Lot (Non-Residential Subdivision)

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Development: • maintains the safety of people on the site from flooding; • is designed, located and constructed to reduce the potential for damage to the structure and contents; and • does not increase the potential for flood damage on site any other property.	AO1. There is no increase in the number of allotments below the IFAL. AO2. Where an increase in the number of lots is proposed below the IFAL, lots are designed with regard for the following measures: **Evacuation Routes** • There is at least one road evacuation route that remains passable for emergency evacuation during all floods events up to the IFAL, or the site is located in an area where there is sufficient flood warning time to enable safe evacuation. **Conveyance** • Subdivision is designed to ensure conveyance of flood waters through the site **Utilities and Utility Installations** • Any components of the urban infrastructure that are likely to fail to function or may result in contamination when inundated by flood water required to service the proposed lots are located above the IFAL or designed and constructed to exclude floodwater intrusion / infiltration. • Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the floodwater. • On-site waste water treatment and disposal systems shall be located to avoid impairment to them or contamination from them during flooding. **Upstream and Downstream Impacts** • Development does not result in a reduction of on-site flood storage capacity and contains within the subject site any changes to depth, duration, velocity of flood waters of all floods up to and including the IFAL. • The development does not change the flood characteristics at the of flood waters up to the IFAL outside the site in ways that result in the: – loss of flood storage; – loss of or changes to flow paths; – acceleration or retardation of flows; or – any reduction in flood warning times elsewhere on the floodplain. **Fencing** • Fencing must be permeable to allow the passage of flood flows (minimum 90% void space), or be collapsible under flood flow (e.g. timber palings). **Information prepared by Registered Professional Engineer of Queensland may be required to demonstrate compliance with this Principle.*

Operational Work (Filling and Excavation)

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
PO1. Development does not result in adverse impacts on people's safety or the capacity to use land within the floodplain.	AO1. Works do not involve any physical alteration to a watercourse or floodway including vegetation clearing; or net filling exceeding 50 cubic metres below the IFAL. AO2. Where filling, excavation or physical alteration to a watercourse, flood

	way or flow path is proposed on land below the IFAL the works are designed with regard for the following measures: • Works do not result in a reduction of on-site flood storage capacity and contain within the site any changes to depth, duration, velocity of flood waters of all floods up to and including the IFAL.* • Works do not change the characteristics of flood water of all floods up to an including the IFAL in ways that result in: – loss of/changes to flow paths; – acceleration or retardation of flows; or – any reduction in flood warning times elsewhere on the floodplain. **Information prepored by Registered Professionol Engineer of Queensland may be required to demonstrote compliance with this Principle.*

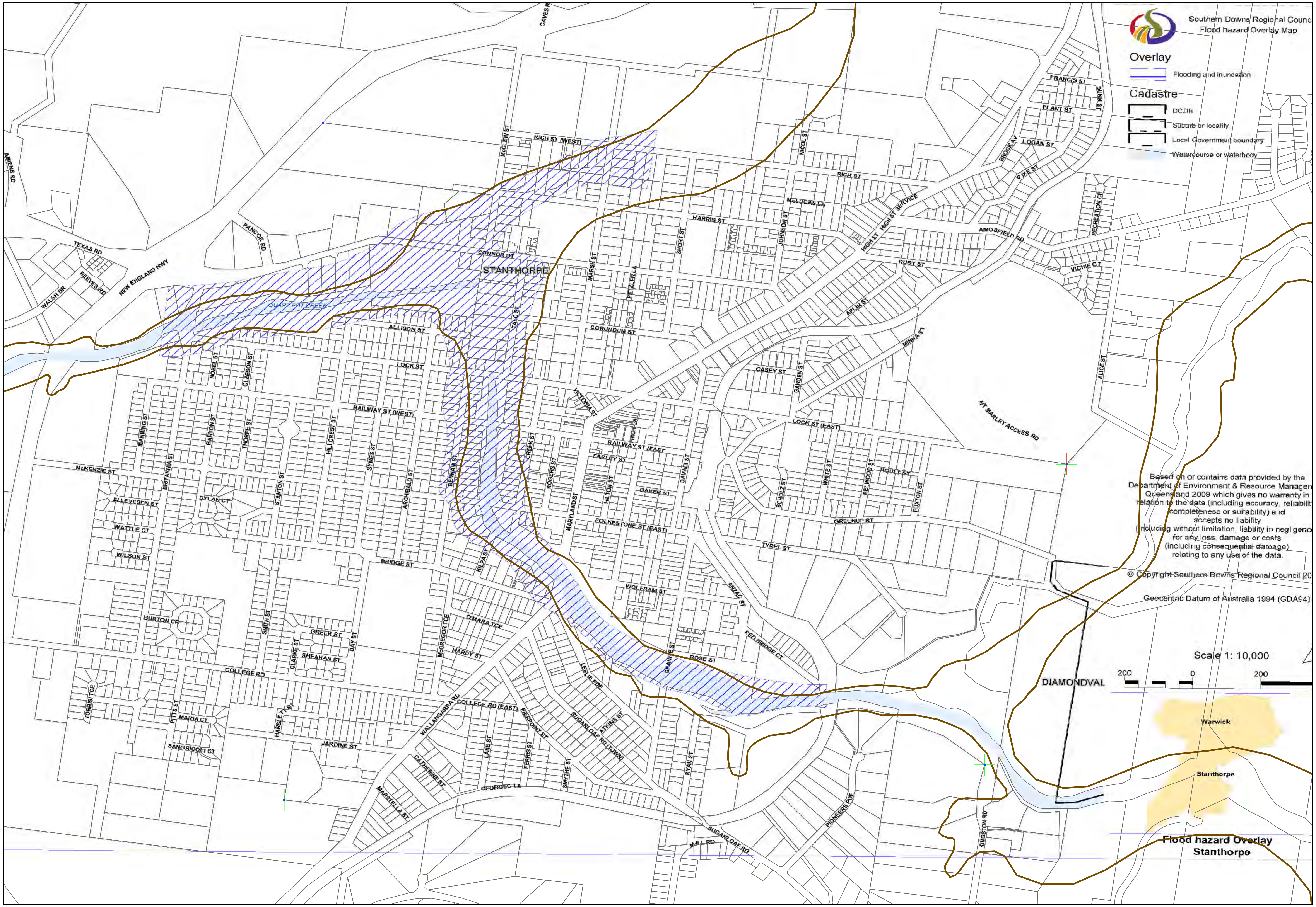
SCHEDULE 2 –INTRODUCTORY STATEMENT

The Interim Floodplain Assessment Overlay

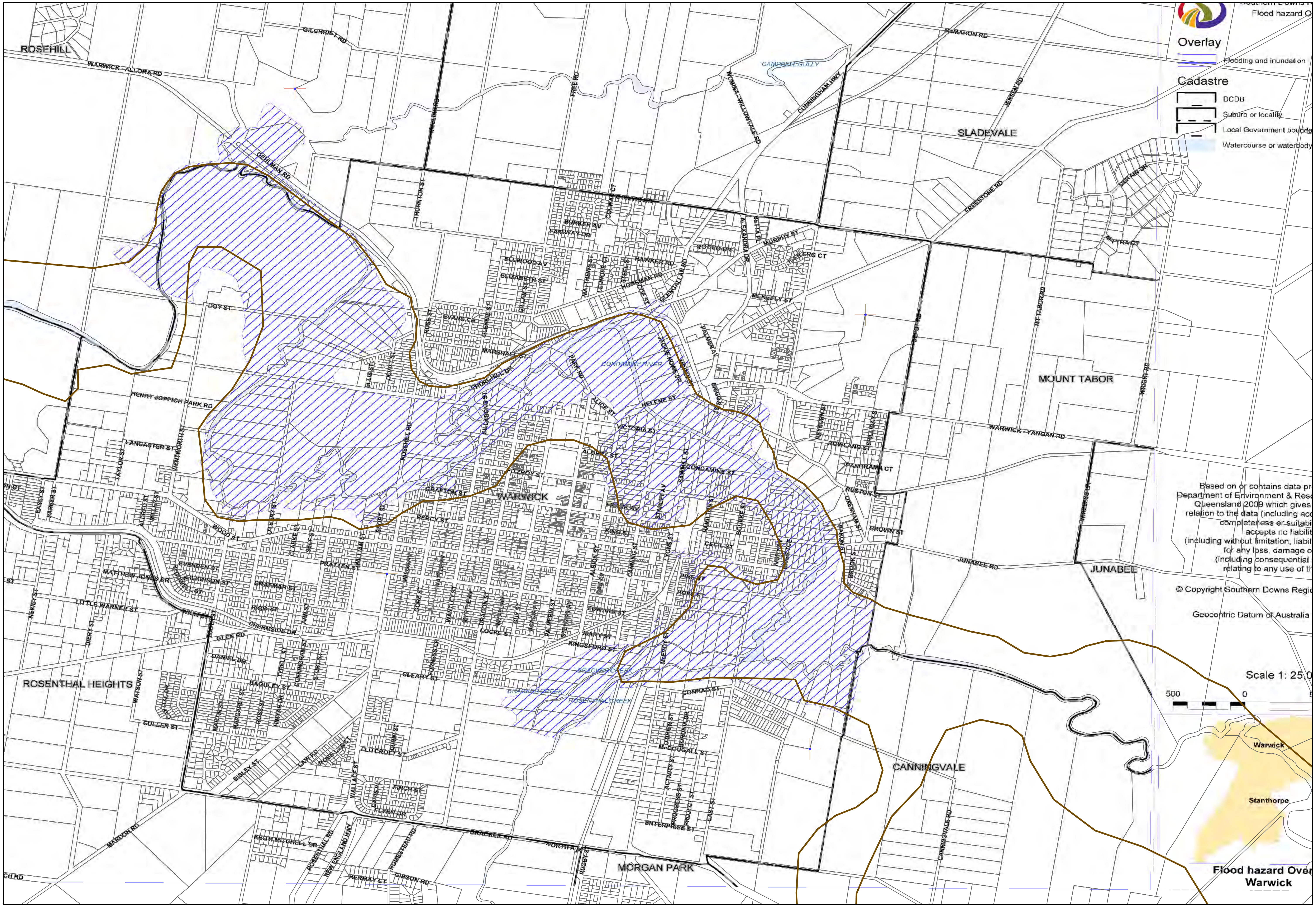
The Interim Floodplain Assessment Overlay is adopted as an interim measure to ensure the potential impacts of flooding on development are appropriately considered.

The Interim Floodplain Assessment Overlay includes mapping which identifies land within which Assessable Development requires assessment against the Model Code.

The Model Code provides technical provisions that apply to Assessable Development on land wholly or partially located within the Interim Floodplain Assessment Overlay. The Model Code must be considered together with other relevant Planning Scheme Codes that are applicable to the subject development.

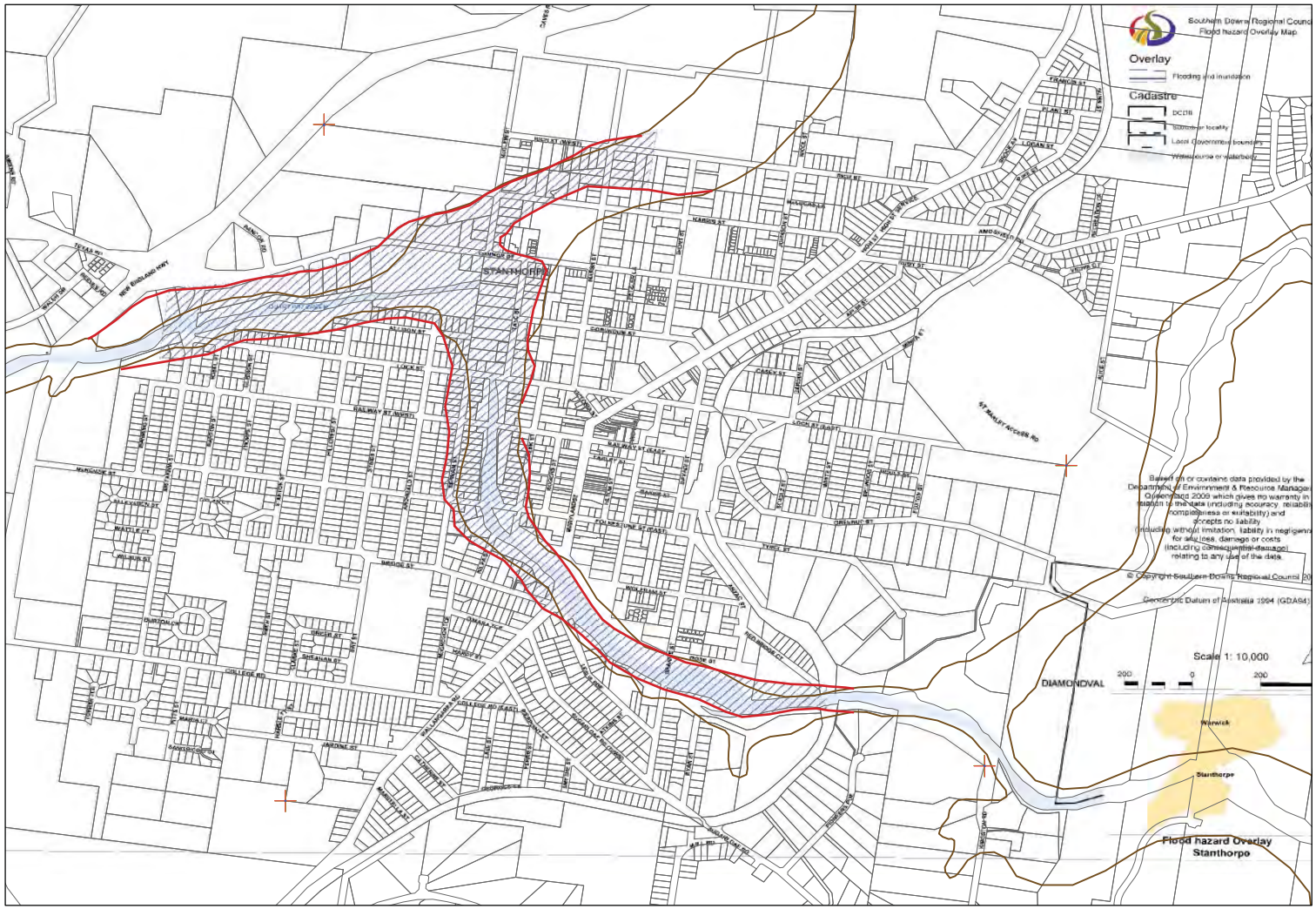


Southern Downs Regional Council
Flood hazard Overlay Map
Overlay
Flooding and inundation
Cadastre
DCDB
Suburb or locality
Local Government boundary
Watercourse or waterbody
Based on or contains data provided by the Department of Environment & Resource Management Queensland 2009 which gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data.
© Copyright Southern Downs Regional Council 20
Geocentric Datum of Australia 1994 (GDA94)
Scale 1: 10,000
200
0
200
Warwick
Stanthorpe
Flood hazard Overlay
Stanthorpe
STANTHORPE
DIAMONDVAL
QUART POT CREEK
NEW ENGLAND HWY
CAVES RD
AMIENS RD
TEXAS RD
REEVES RD
WALSH DR
PANCOR RD
RICH ST (WEST)
RICH ST
McGLEW ST
NICOL ST
McLUCAS LA
HARRIS ST
HIGH ST
HIGH ST SERVICE
JOHNSON ST
SHORT ST
CONNOR ST
MARSH ST
PETZLER LA
CORUNDUM ST
ALLISON ST
LOCK ST
LOCK ST (EAST)
RAILWAY ST (WEST)
RAILWAY ST (EAST)
VICTORIA ST
FARLEY ST
BAKER ST
FOLKESTONE ST (EAST)
TYREL ST
GREENUP ST
HOULT ST
WOLFRAM ST
ANZAC ST
RED BRIDGE CT
ROSE ST
GRANITE ST
FRANCIS ST
PLANT ST
LOGAN ST
PIKE ST
BROCK AV
AMOSFIELD RD
RUBY ST
APLIN ST
MINNA ST
CASEY ST
GARDEN ST
ALICE ST
RECREATION CR
VICHIE CT
MT MARLEY ACCESS RD
SCHOLZ ST
WHITE ST
BELLWOOD ST
FOXTON ST
DAVADI ST
HILTON ST
MARYLAND ST
ROGERS ST
CREEK ST
KILPA ST
DENHAM ST
ARCHIBALD ST
SYMES ST
HILLCREST ST
STANTON ST
THORPE ST
BARTON ST
MANNING ST
BRITANNIA ST
NOBEL ST
GLEESON ST
McKENZIE ST
ELLEVESON ST
DYLAN CT
WATTLE CT
WILSON ST
BRIDGE ST
BURTON CR
SMITH ST
GREER ST
SHEAHAN ST
CLARKE ST
DAY ST
McGREGOR TCE
O'MARA TCE
HARDY ST
COLLEGE RD
COLLEGE RD (EAST)
TORRISI TCE
PITTS ST
MARIA CT
SANGRICOLI CT
HARSLETT ST
JARDINE ST
WALLANGARRA RD
CATHERINE ST
MARSTELLA ST
GEORGES LA
LAUE ST
FERRIS ST
PIERPOINT ST
SMYTHE ST
LESLIE PDE
SUGARLOAF RD (TOWN)
SUGARLOAF RD
ATKINS ST
RYAN ST
MILL RD
PIONEERS PDE
KINGSTON RD



Flood hazard O
Overlay
Flooding and inundation
Cadastre
DCDB
Suburb or locality
Local Government bounda
Watercourse or waterbody
ROSEHILL
SLADEVALE
MOUNT TABOR
WARWICK
JUNABEE
ROSENTHAL HEIGHTS
CANNINGVALE
MORGAN PARK
CONDAMINE RIVER
CAMPBELL GULLY
BRACKER CREEK
ROSENTHAL CREEK
WARWICK - ALLORA RD
GILCHRIST RD
CUNNINGHAM HWY
McMAHON RD
WARWICK - YANGAN RD
JUNABEE RD
NEW ENGLAND HWY
BRACKER RD
Based on or contains data pr
Department of Environment & Reso
Queensland 2009 which gives
relation to the data (including acc
completeness or suitabi
accepts no liabilit
(including without limitation, liabil
for any loss, damage o
(including consequential
relating to any use of th
© Copyright Southern Downs Regio
Geocentric Datum of Australia
Scale 1: 25,0
500
0
Warwick
Stanthorpe
Flood hazard Over
Warwick

EXAMPLE OF REFINEMENT PROCESS - Stanthorpe

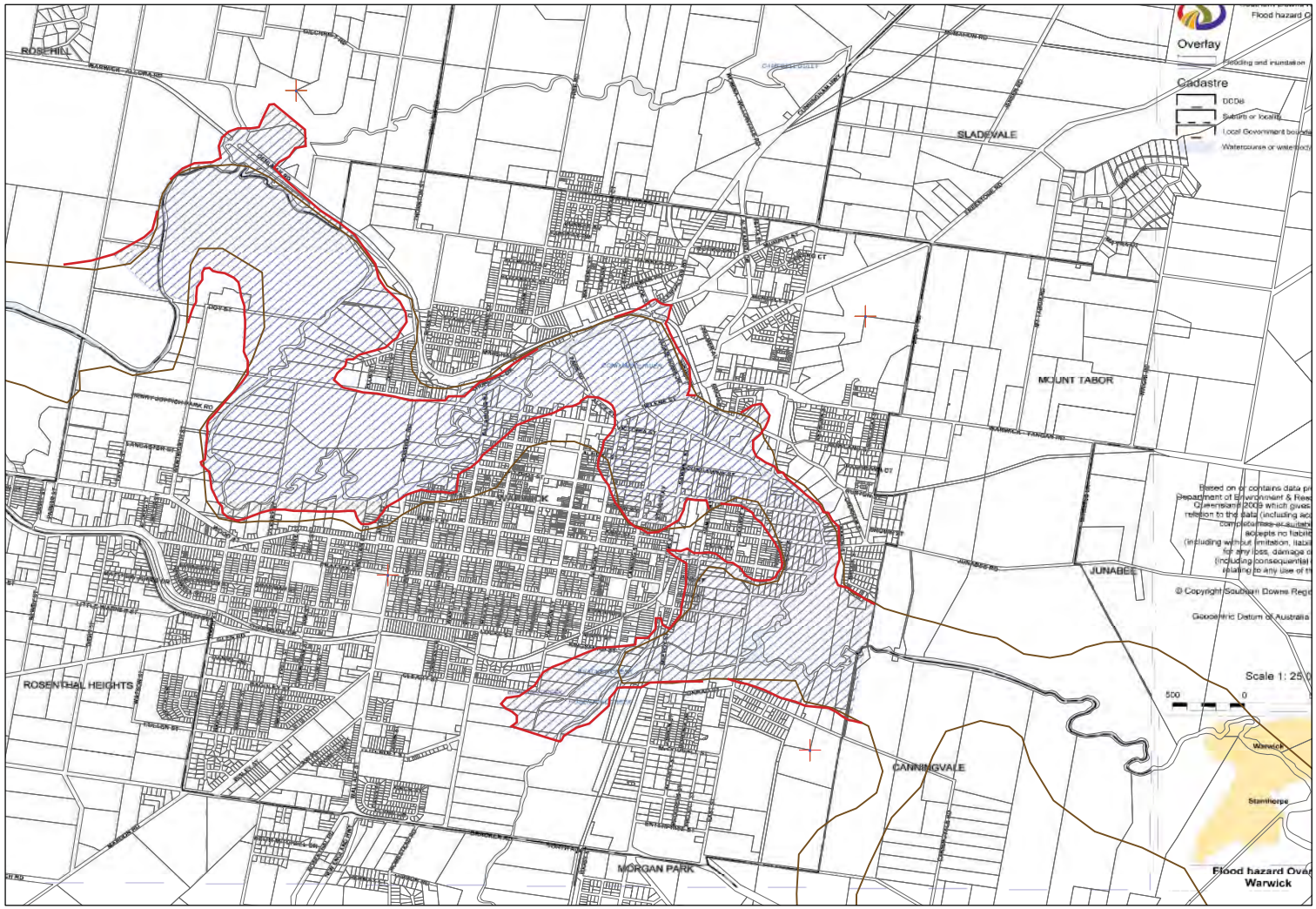


Refined floodplain assessment overlay incorporating local government verification

Detailed flood study or flood information available in this area

Interim Floodplain Assessment Overlay as produced by the Qld Reconstruction Authority

EXAMPLE OF REFINEMENT PROCESS - Warwick



Refined floodplain assessment overlay incorporating local government verification

Detailed flood study or flood information available in this area

Interim Floodplain Assessment Overlay as produced by the Qld Reconstruction Authority

Planning for stronger, more resilient floodplains

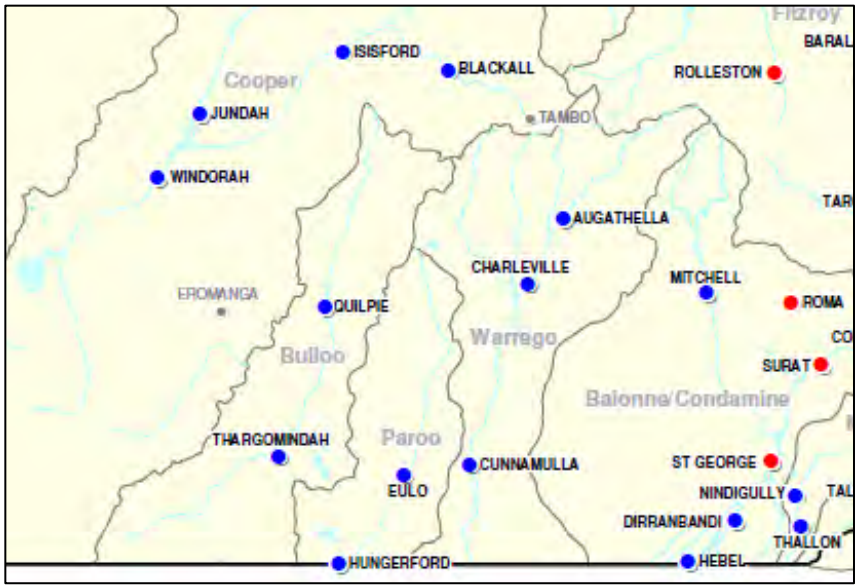
MARANOA REGIONAL COUNCIL
Brendan Nelson, General Manager, Land Use Planning
Queensland Reconstruction Authority
14 October 2011

Australian Government
Geoscience Australia

Queensland Government

Presentation Outline

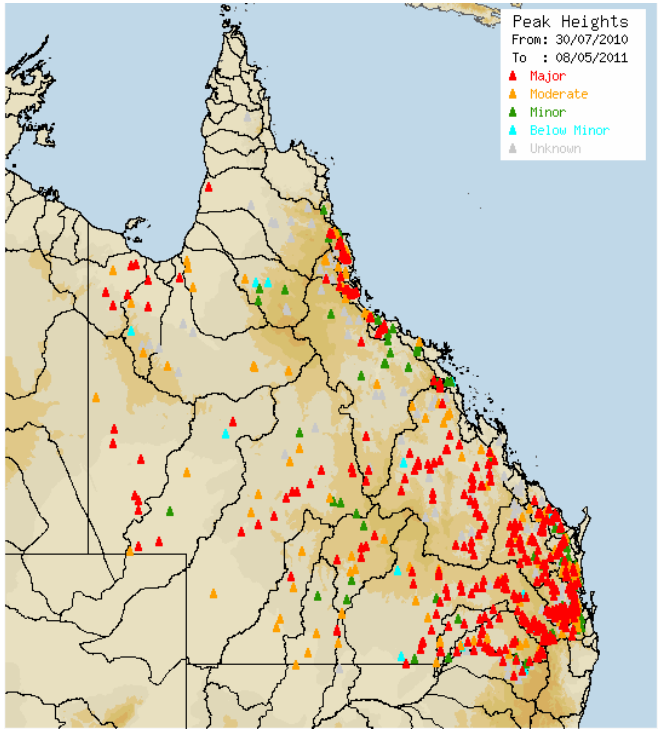
- Project Context
- Interim Floodplain Management Toolkit
- Interim Floodplain Mapping [redacted]
  (Peter Lennon - DERM)
- Interim Floodplain Assessment Code
  (Model Code)
- TSPP and the SPP1/03
- Implementation process
- Questions



2010/2011 inundated and flood affected towns

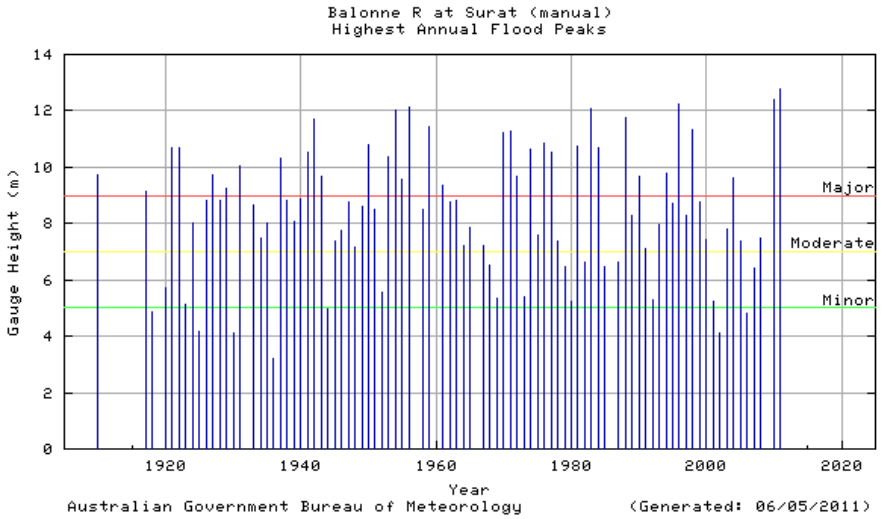
Flooding Context / What do we know?

- 91% of the State disaster activated as a result of flooding events
- 210 townships/suburbs were affected by flooding
- 13 river catchments recorded th[redacted] levels
- Damage bill from summer disasters $6.8B
- 65% of planning schemes do not contain any flood mapping
- Reliance on the applicant to deal with the impacts of flooding
- Floodplains do not correlate with local government boundaries
- New building codes will be brought in by the end of 2011 promoting resilience in houses
- Limited visibility of flood studies



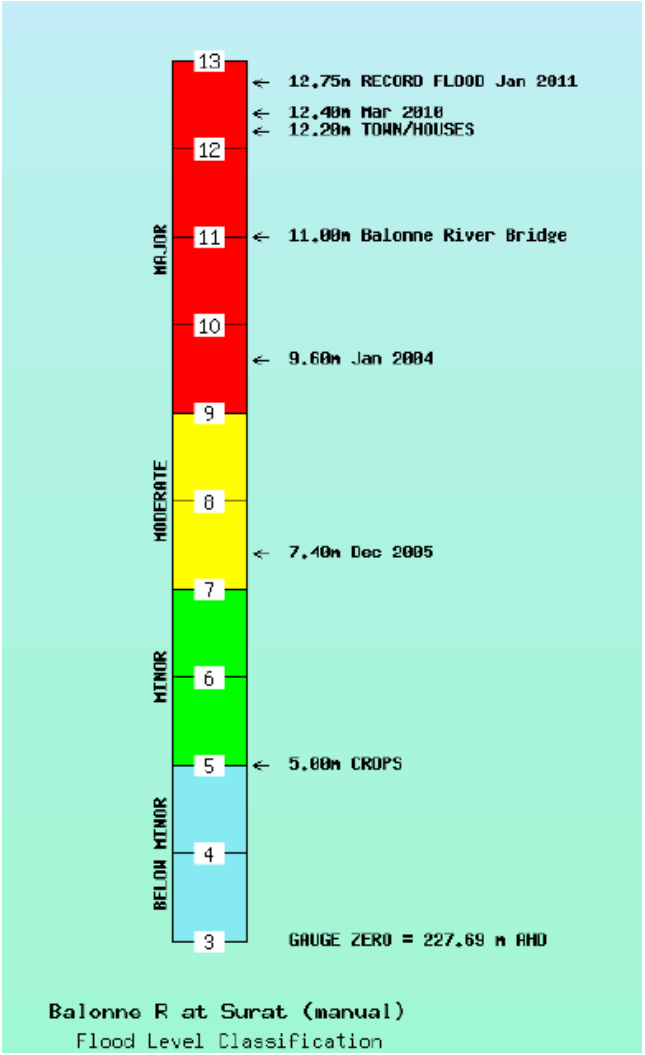
Source: *Bureau of Meteorology*

Flooding in Maranoa – Surat



River height station	Feb 1942	Jan/Feb 1956	May 1983	Apr 1988	Apr 1990	Jan 1996	Mar 2010	Early Jan 2011	Late Jan 2011
Cotswold TM	-	-	16.13	15.44	5.91	14.74	12.34	17.82	16.99
Warkon	11.59	11.70	11.67	11.63	8.74	11.88	11.62	12.03	11.79
Surat	11.68*	12.12*	12.09*	11.74	9.69	12.25	12.40	12.75	12.40
Weribone TM	-	-	12.99	12.41	12.14	13.11	13.71	13.50	13.15
Warroo	14.10	14.36	14.17	12.60	11.75	13.70	14.37	15.06	14.50
Mitchell	-	7.00	4.66	-	8.08	-	7.50	-	-
Old Cashmere TM	-	-	7.47	-	9.72	-	8.86	-	-
St George	9.14*	10.80*	11.17	9.90	12.24	10.98	13.39	13.20	12.49
Whyenbah	-	7.82	7.97	7.81	8.06	8.00	8.05	8.14	8.05
Dirranbandi	5.08	5.16	5.14	5.10	5.20	5.12	5.28	5.34	5.27
Hebel	-	-	2.30	2.10	2.18	2.25	2.34	2.37	2.32

All heights are in metres on flood gauges.
[*] These readings were taken at old flood gauges which cannot be related to the current gauge heights.



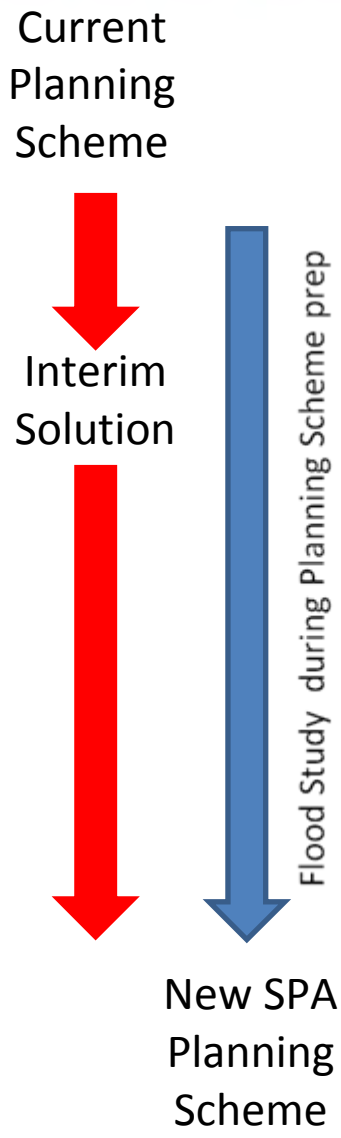
Overview – QldRA Project Scope

Planning for stronger, more resilient floodplains, to assist Councils to ensure that floodplain management is addressed through land use planning.

[redacted]

- ***Part 1 – Interim measures to support floodplain management in existing planning schemes,*** is an information toolkit including mapping identifying an interim floodplain assessment overlay and interim floodplain management controls.

- ***Part 2 – Standard planning scheme provisions and flood study template,*** will enable consistency in application of floodplain management controls and regulation across Queensland within new planning schemes prepared under the *Sustainable Planning Act 2009*.



PART 1 – Interim Solution

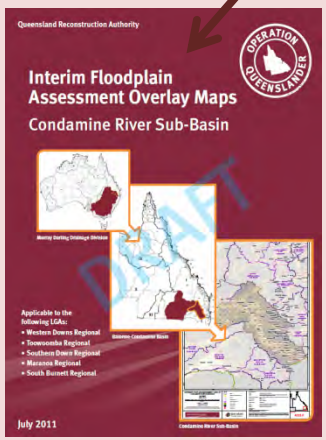
Toolkit released on 17 September 2011 for consultation

Guideline
Mapping (hard copy and digital) for each sub-basin within an LGA boundary
Planning scheme provisions – Model Code

Part 1 - Supports proposed amendments to Queensland Development Code to fast-track principles for the construction of buildings in flood prone areas.

TOOLKIT

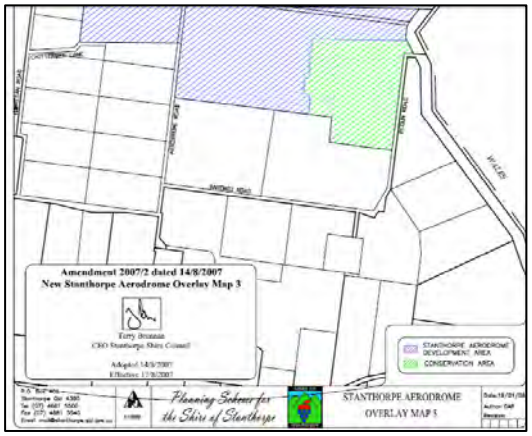
GUIDELINE Part 1



Mapping **Code provisions**

What exactly is Part 1?

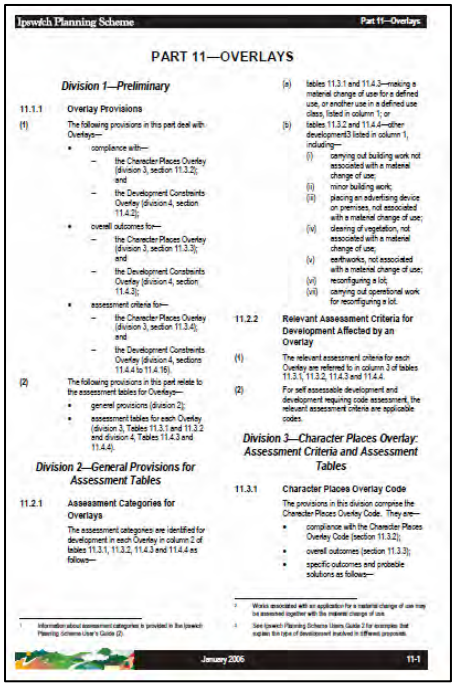
Many existing schemes contain overlays/ development codes ie. Bushfire, Landslide, Biodiversity, Aerodromes, Rural Lands etc.



Part 1 offers an Overlay to be inserted into existing planning schemes that can be used like any other Overlay to assess a development's ability to deal with potential flooding impacts.

Mapping - provided for whole of the scheme area and not just townships. Can be amended and encouraged to be amended with best local information.

Code provisions would apply to areas triggered by the mapping.


Ipswich Planning Scheme — Part 11—Overlays

PART 11—OVERLAYS

Division 1—Preliminary

11.1.1 Overlay Provisions

(1) The following provisions in this part deal with Overlays—

- compliance with—
  - the Character Places Overlay (division 3, section 11.3.3); and
  - the Development Constraints Overlay (division 4, section 11.4.2);
- overall outcomes for—
  - the Character Places Overlay (division 3, section 11.3.3); and
  - the Development Constraints Overlay (division 4, section 11.4.3);
- assessment criteria for—
  - the Character Places Overlay (division 3, section 11.3.4); and
  - the Development Constraints Overlay (division 4, sections 11.4.4 to 11.4.16).

(2) The following provisions in this part relate to the assessment tables for Overlays—

- general provisions (division 2);
- assessment tables for each Overlay (division 3, Tables 11.3.1 and 11.3.2 and division 4, Tables 11.4.3 and 11.4.4).

Division 2—General Provisions for Assessment Tables

11.2.1 Assessment Categories for Overlays

The assessment categories are identified for development in each Overlay in column 2 of tables 11.3.1, 11.3.2, 11.4.3 and 11.4.4 as follows—

(a) tables 11.3.1 and 11.4.3—making a material change of use for a defined use, or another use in a defined use class, listed in column 1; or

(b) tables 11.3.2 and 11.4.4—other development3 listed in column 1, including—

(i) carrying out building work not associated with a material change of use;
(ii) minor building work;
(iii) placing an advertising device on premises, not associated with a material change of use;
(iv) clearing of vegetation, not associated with a material change of use;
(v) earthworks, not associated with a material change of use;
(vi) reconfiguring a lot;
(vii) carrying out operational work for reconfiguring a lot.

11.2.2 Relevant Assessment Criteria for Development Affected by an Overlay

(1) The relevant assessment criteria for each Overlay are referred to in column 3 of tables 11.3.1, 11.3.2, 11.4.3 and 11.4.4.

(2) For self assessable development and development requiring code assessment, the relevant assessment criteria are applicable codes.

Division 3—Character Places Overlay: Assessment Criteria and Assessment Tables

11.3.1 Character Places Overlay Code

The provisions in this division comprise the Character Places Overlay Code. They are—

- compliance with the Character Places Overlay Code (section 11.3.2);
- overall outcomes (section 11.3.3);
- specific outcomes and probable solutions as follows—

1 Information about assessment categories is provided in the Ipswich Planning Scheme User's Guide (2).

3 Works associated with an application for a material change of use may be assessed together with the material change of use.

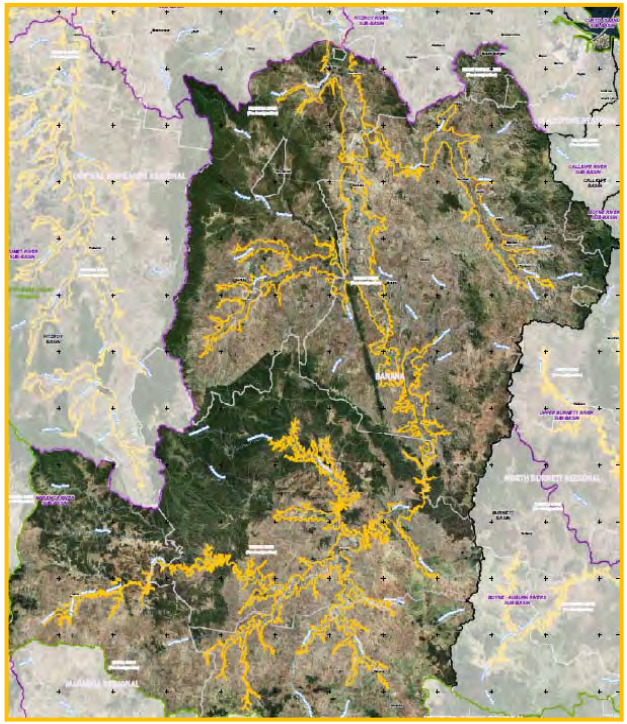
4 See Ipswich Planning Scheme Users Guide 2 for examples that explain the type of development involved in different proposals.

January 2006 11-1

Interim Floodplain Assessment Overlay Area

[redacted]

Overlay area not based on an defined flood event, does not represent a Q100 nor a depth but is a spatial extent based on datasets to determine an area of interest for potential flooding impacts



EXAMPLE Mapping - Banana Shire - Bushfire

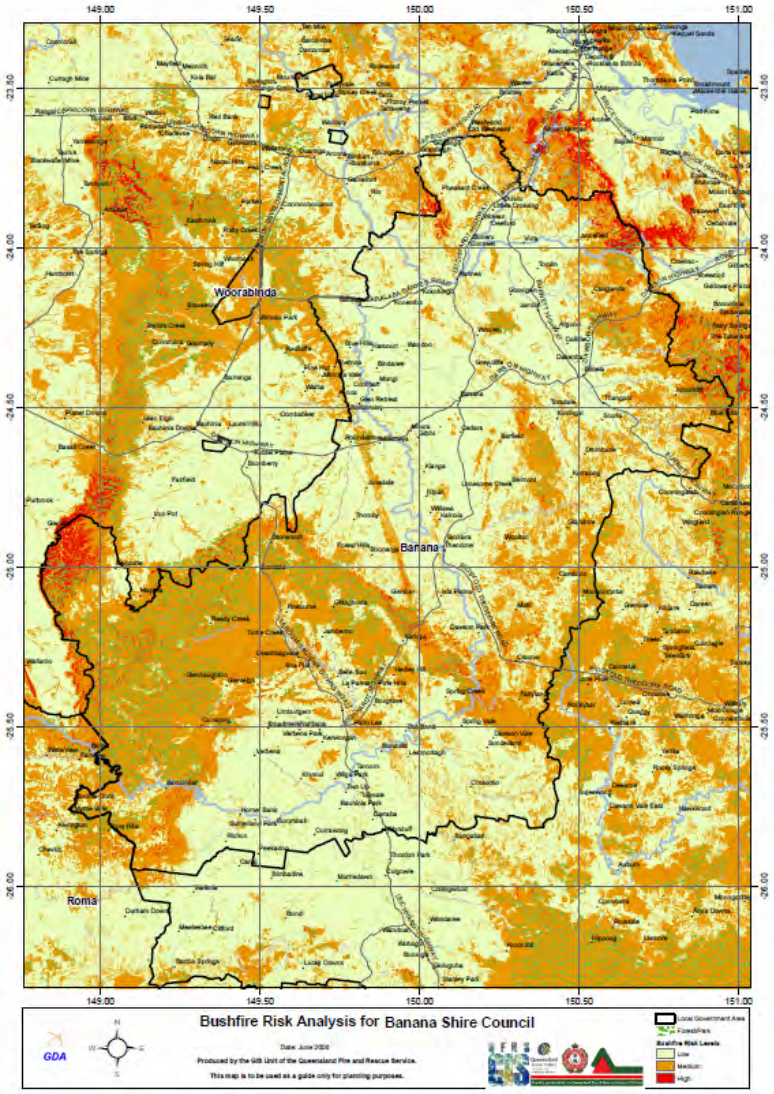
Mapping produced by QFRS across the State for each Local Government Area.

[redacted]

State wide model of potential bushfire risk areas to be used for planning – default state-wide mechanism

Based of three variables:-

- **Slope (fire burns quicker on greater slopes)**
- **Aspect (Exposure of direct sunlight on vegetation)**
- **Vegetation**
  - **Remnant Vegetation, Pre-clear Vegetation, Tropical Savannahs and Tree Survey data where available**



PART 2 – Long term solution

Flood Study Template and Standardised Planning Scheme Provisions – Mid November

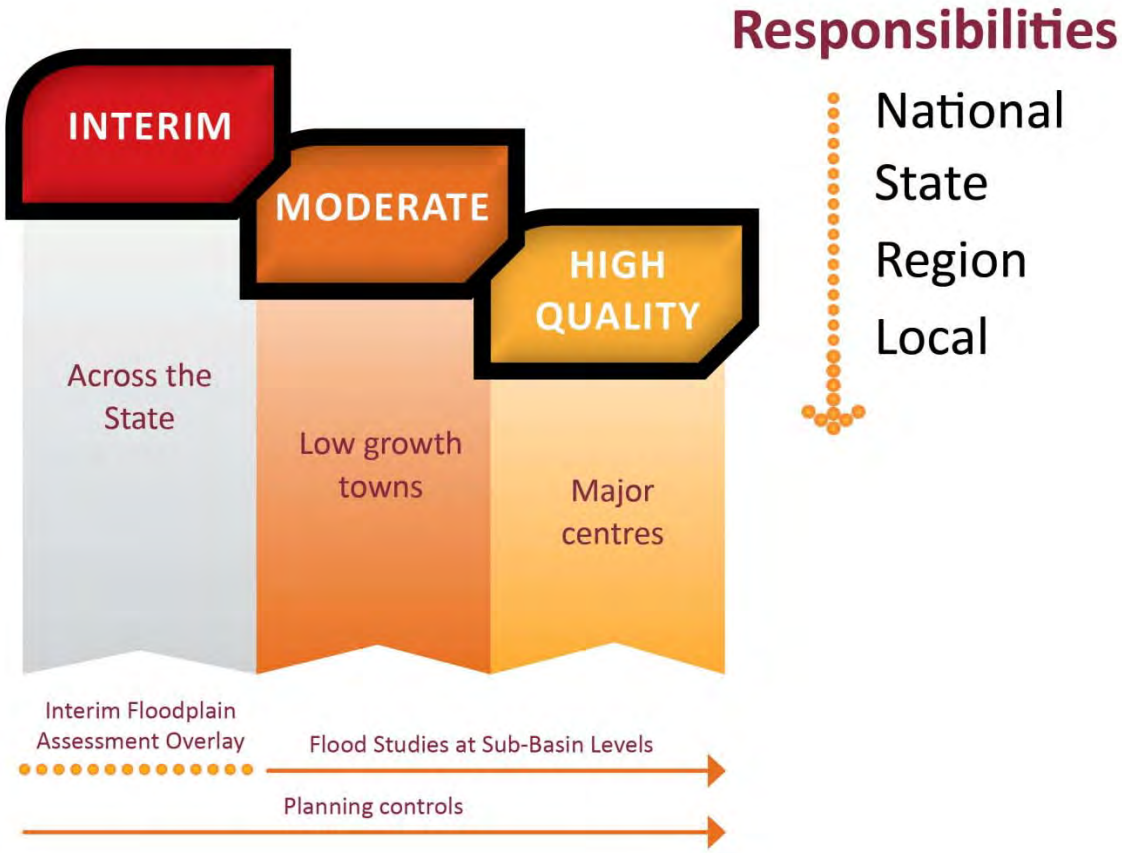
Flood Study Template

- Needs to be outcome driven rather than via process or methodology
- Needs to be economic
- Fit for purpose

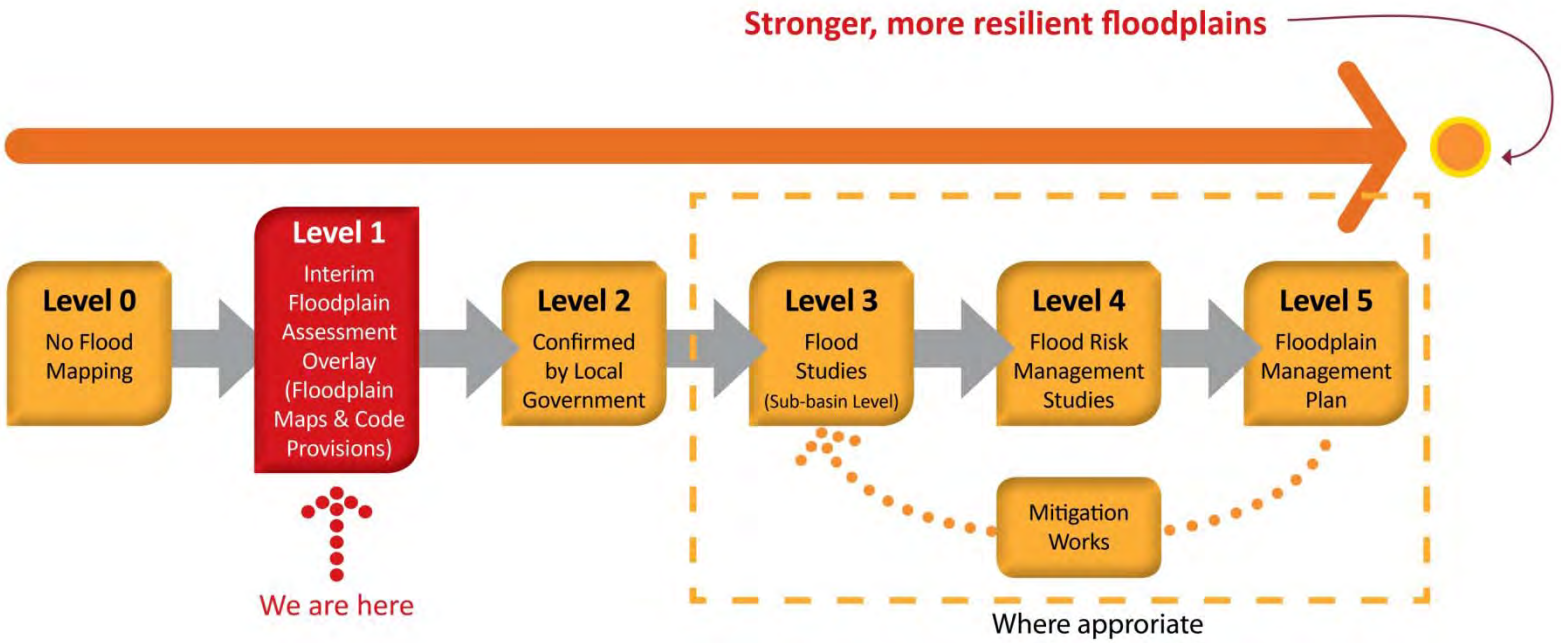
Queensland Planning Provisions

- new standardised approach in Qld for all new planning schemes – means consistency across the State
- Interim overlay and flood study to help inform the strategic planning process
- Transition strategies for land use zones

Flood Mapping – Needs to be fit for purpose

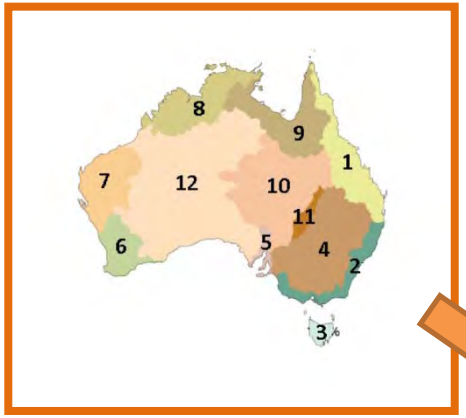


Flood Mapping Maturity Levels



Floodplain - Line of Sight

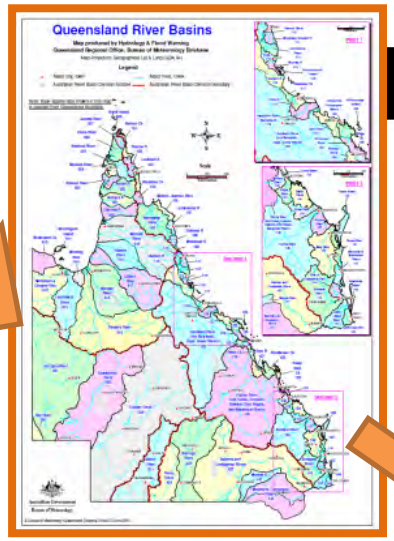
DRAINAGE DIVISION



National = 12
Queensland = 5 (40%)

including:
Northeast Coast (1)
Gulf of Carpentaria (9)
Murray Darling Division (4)
Bulloo – Bancannia Division (10)
Lake Eyre Division (11)

RIVER-BASINS



National = 246
Queensland = 75 (30%)
Ie. Fitzroy River Basin
Condamine River Basin

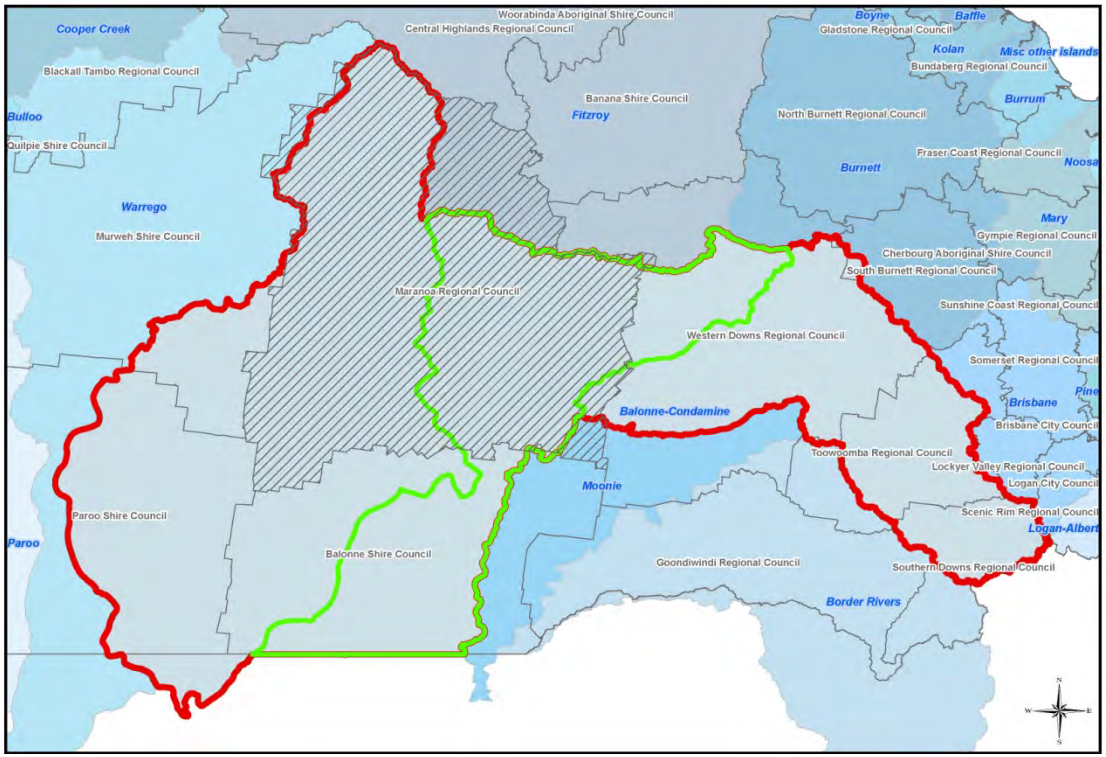
SUB- BASINS

128 Sub-basins in Queensland
Ie. Dawson River , Nogoa River

Balonne- Condamine River Basin & Balonne River Sub-basin

Balonne-Condamine River Basin
Southern Downs
Toowoomba Regional
Western Downs
Maranoa Regional
South Burnett Regional
Balonne Shire

Balonne River Sub-basin
Western Downs
Maranoa Regional
Balonne Regional



Drainage Division	**4 – Murray Darling Division**
River Basin	**Balonne-Condamine**
Sub-basin	**Balonne River**

Sub-basins in the Maranoa LGA
Balonne River
Wallam Creeks
Dawson River
Condamine River
Moonie River
Maranoa River
Warrego River

Interim Floodplain Mapping

[redacted]

Director – Data Management and Acquisition
Department of Environment and Resource Management

What was asked of DERM

To provide or produce a mapping product that would be of assistance in the land use planning process

- **Would be required over all of Queensland, not just towns**
  - **Would need to be available within [redacted]**
  - **Would need to be produced at scale where property could be identified so that location of development applications could be identified**

Primary objective was to identify an area of interest where the Council could ask the question of how proposed developments in the mapped areas deal with the potential for flooding impacts

Should be mapped by river sub-basins, not LGA's

The following deliverables to QRA were agreed:

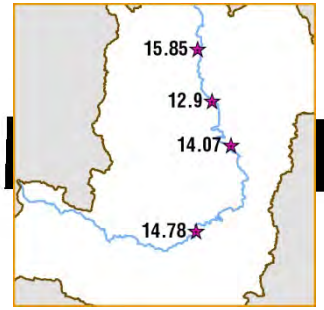
- **Digital dataset suitable for inclusion in GIS**
- **Mapbook (series of A3 maps covering each sub-basin), in electronic form suitable for both printing and display on QRA website.**

First 24 sub-basins to be completed in 5 weeks... (by 1 Aug)

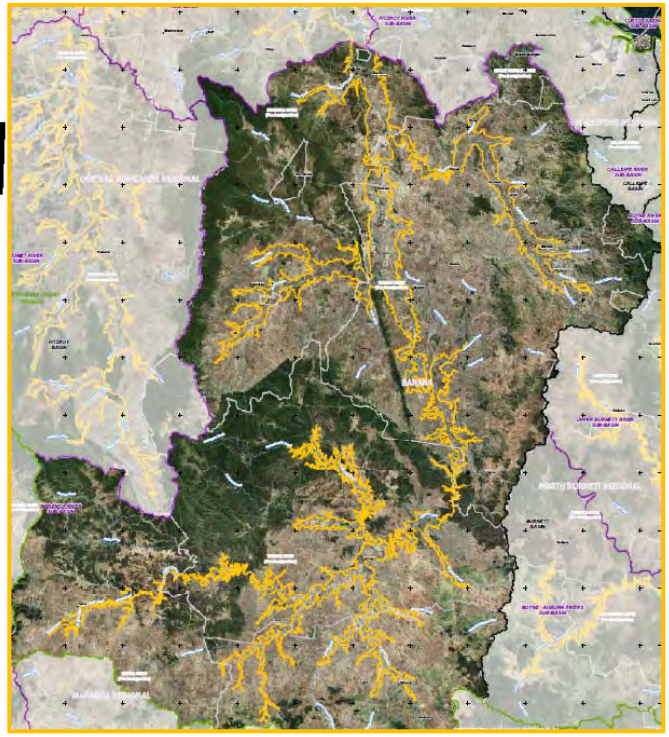
SUMMARY – Dawson River Sub-basin

10m Contours

LandSat

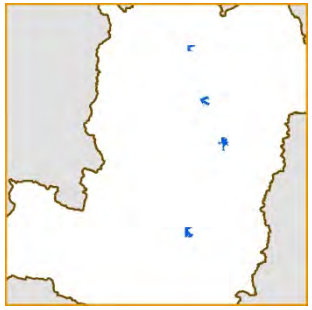


Gauging Heights



Pre-cleared vegetation

Stream Orders 5 – 9



Aerial for towns

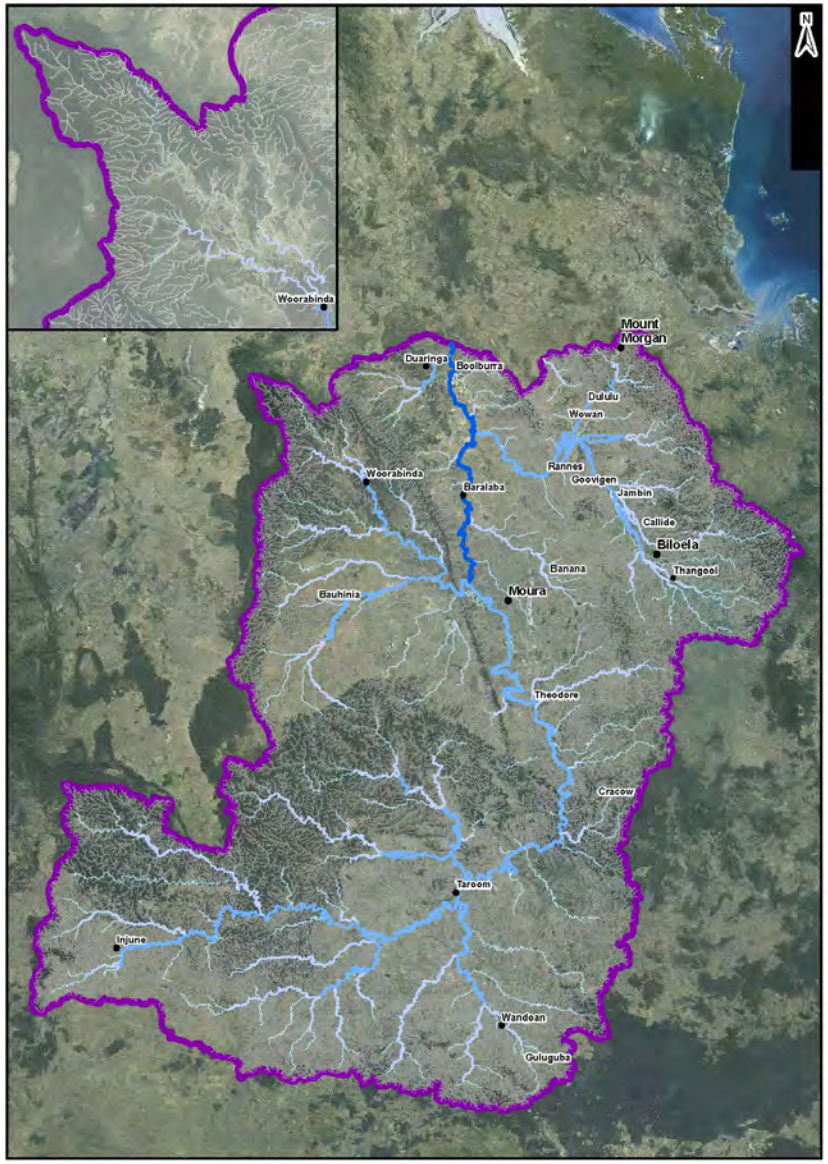
Mapping Methodology

STEP 1

Identify each sub-basin and [redacted] available imagery

~ SPOT imagery

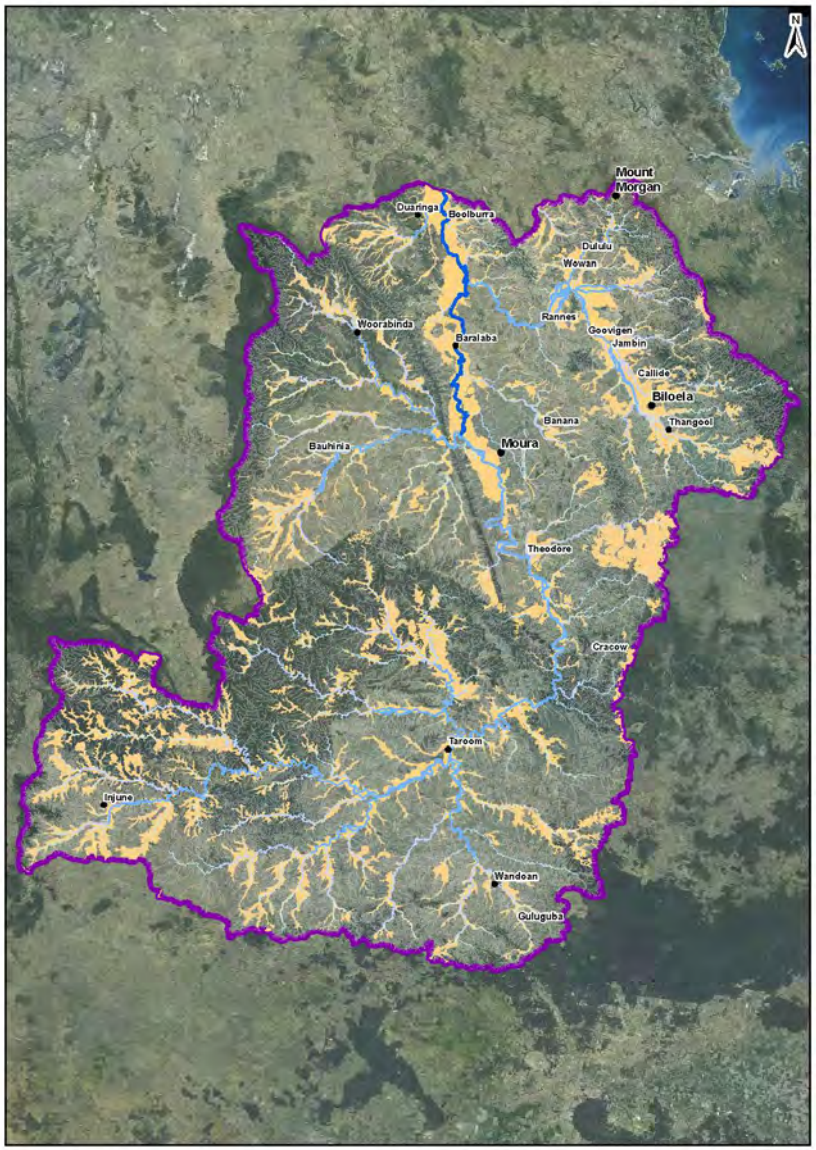
~ Aerial photography over towns when captured to assist in mapping flood events – 115 towns and suburbs during 2011, at or shortly after peak



STEP 2

Assess stream drainage classification levels in the basin

~ Focus on higher order streams
~ Knock out small tributaries

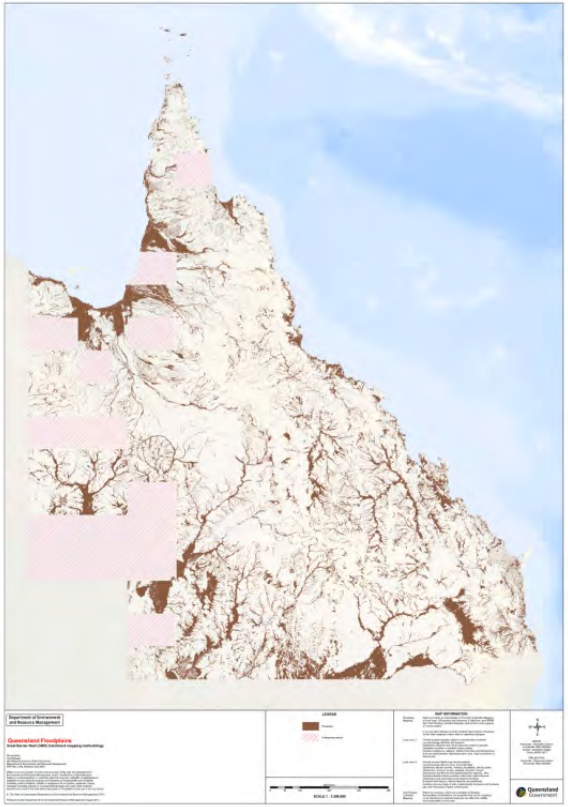


STEP 3 –

Identify areas that indicate alluvial systems, estuarine and marine deposits

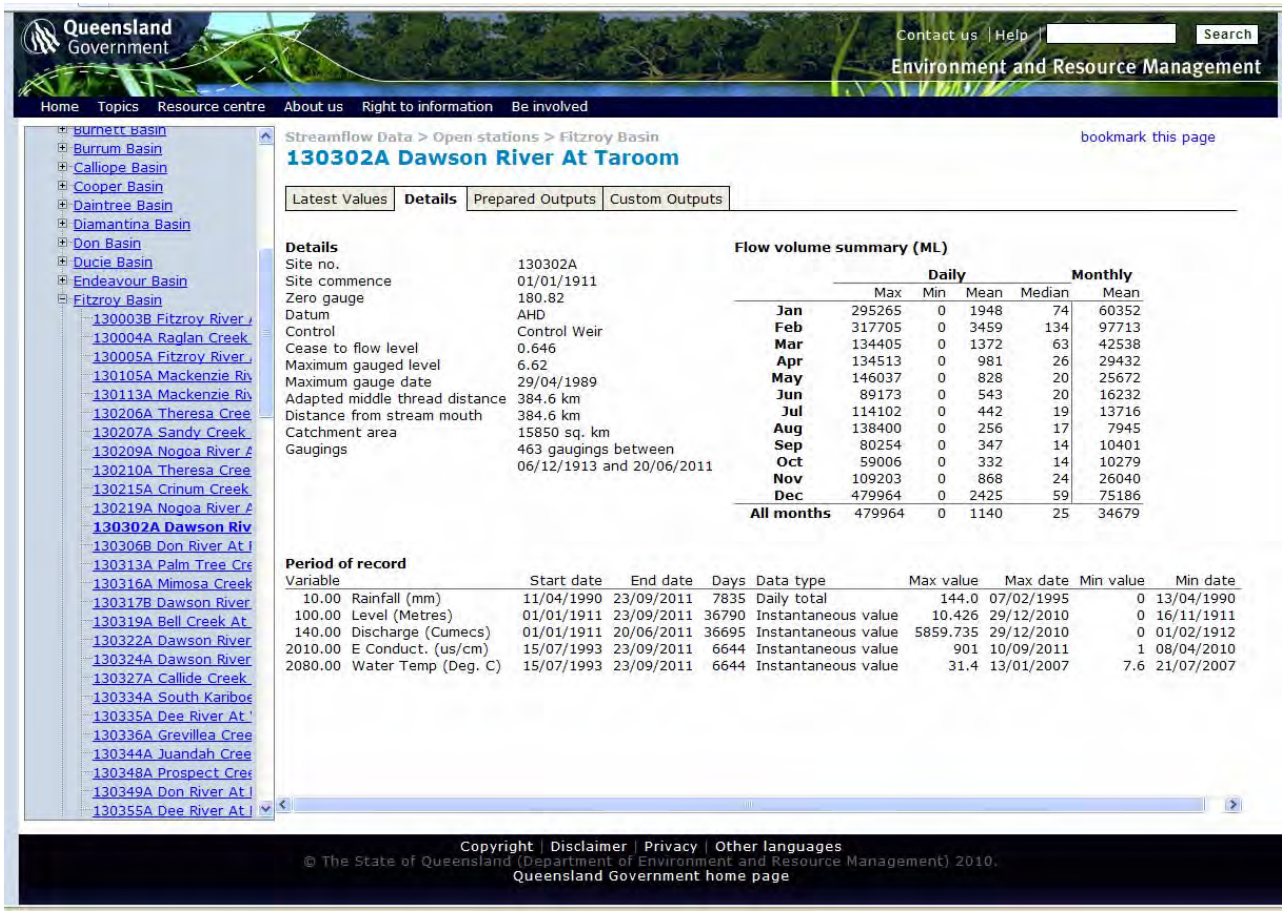
[redacted]

~ Existing dataset from Great Barrier Reef project extended



STEP 4 - Identify stream gauges and their highest recorded levels

~ also cross section distances to left & right banks



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- Burnett Basin
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- Cooper Basin
- Daintree Basin
- Diamantina Basin
- Don Basin
- Ducie Basin
- Endeavour Basin
- Fitzroy Basin
  - 130003B Fitzroy River
  - 130004A Raglan Creek
  - 130005A Fitzroy River
  - 130105A Mackenzie Riv
  - 130113A Mackenzie Riv
  - 130206A Theresa Cree
  - 130207A Sandy Creek
  - 130209A Nogoa River A
  - 130210A Theresa Cree
  - 130215A Crinum Creek
  - 130219A Nogoa River A
  - **130302A Dawson Riv**
  - 130306B Don River At
  - 130313A Palm Tree Cre
  - 130316A Mimosa Creek
  - 130317B Dawson River
  - 130319A Bell Creek At
  - 130322A Dawson River
  - 130324A Dawson River
  - 130327A Callide Creek
  - 130334A South Kariboe
  - 130335A Dee River At
  - 130336A Grevillea Cree
  - 130344A Juandah Cree
  - 130348A Prospect Cre
  - 130349A Don River At
  - 130355A Dee River At

Streamflow Data > Open stations > Fitzroy Basin

bookmark this page

130302A Dawson River At Taroom

Latest Values | **Details** | Prepared Outputs | Custom Outputs

Details

Site no.	130302A
Site commence	01/01/1911
Zero gauge	180.82
Datum	AHD
Control	Control Weir
Cease to flow level	0.646
Maximum gauged level	6.62
Maximum gauge date	29/04/1989
Adapted middle thread distance	384.6 km
Distance from stream mouth	384.6 km
Catchment area	15850 sq. km
Gaugings	463 gaugings between 06/12/1913 and 20/06/2011

Flow volume summary (ML)

	Daily				Monthly
	Max	Min	Mean	Median	Mean
Jan	295265	0	1948	74	60352
Feb	317705	0	3459	134	97713
Mar	134405	0	1372	63	42538
Apr	134513	0	981	26	29432
May	146037	0	828	20	25672
Jun	89173	0	543	20	16232
Jul	114102	0	442	19	13716
Aug	138400	0	256	17	7945
Sep	80254	0	347	14	10401
Oct	59006	0	332	14	10279
Nov	109203	0	868	24	26040
Dec	479964	0	2425	59	75186
All months	479964	0	1140	25	34679

Period of record

Variable		Start date	End date	Days	Data type	Max value	Max date	Min value	Min date
10.00	Rainfall (mm)	11/04/1990	23/09/2011	7835	Daily total	144.0	07/02/1995	0	13/04/1990
100.00	Level (Metres)	01/01/1911	23/09/2011	36790	Instantaneous value	10.426	29/12/2010	0	16/11/1911
140.00	Discharge (Cumecs)	01/01/1911	20/06/2011	36695	Instantaneous value	5859.735	29/12/2010	0	01/02/1912
2010.00	E Conduct. (us/cm)	15/07/1993	23/09/2011	6644	Instantaneous value	901	10/09/2011	1	08/04/2010
2080.00	Water Temp (Deg. C)	15/07/1993	23/09/2011	6644	Instantaneous value	31.4	13/01/2007	7.6	21/07/2007

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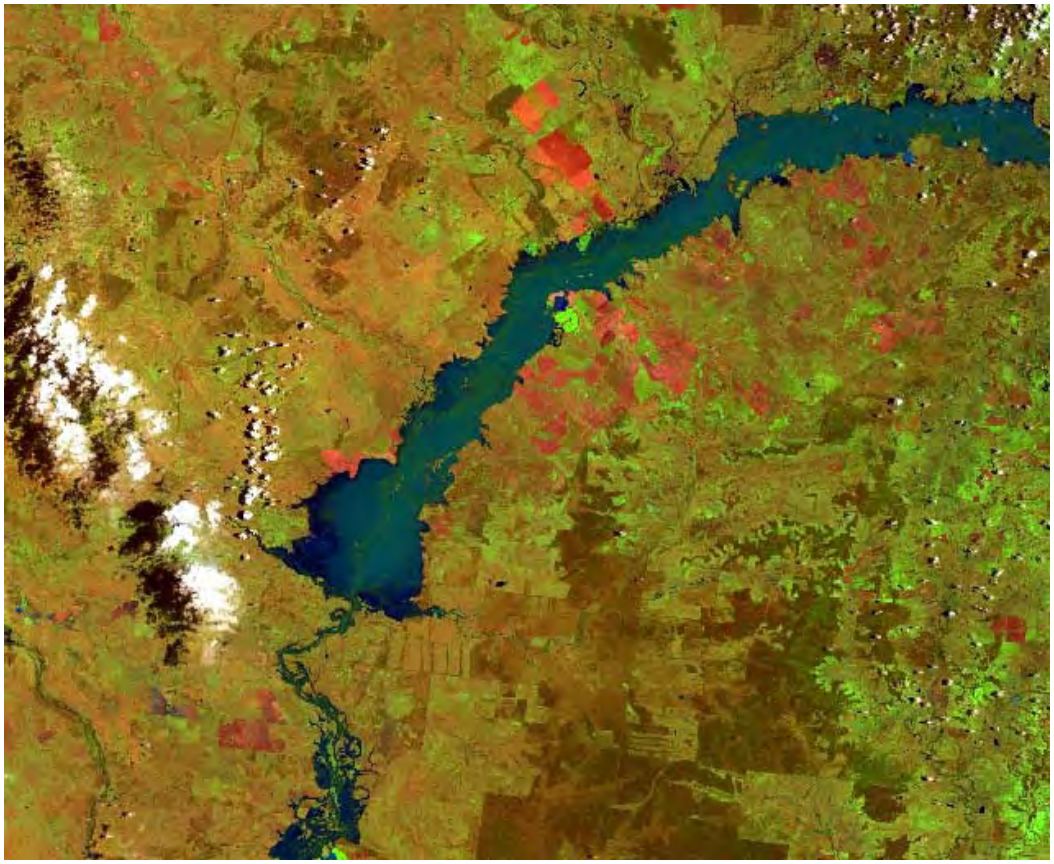
STEP 5 –

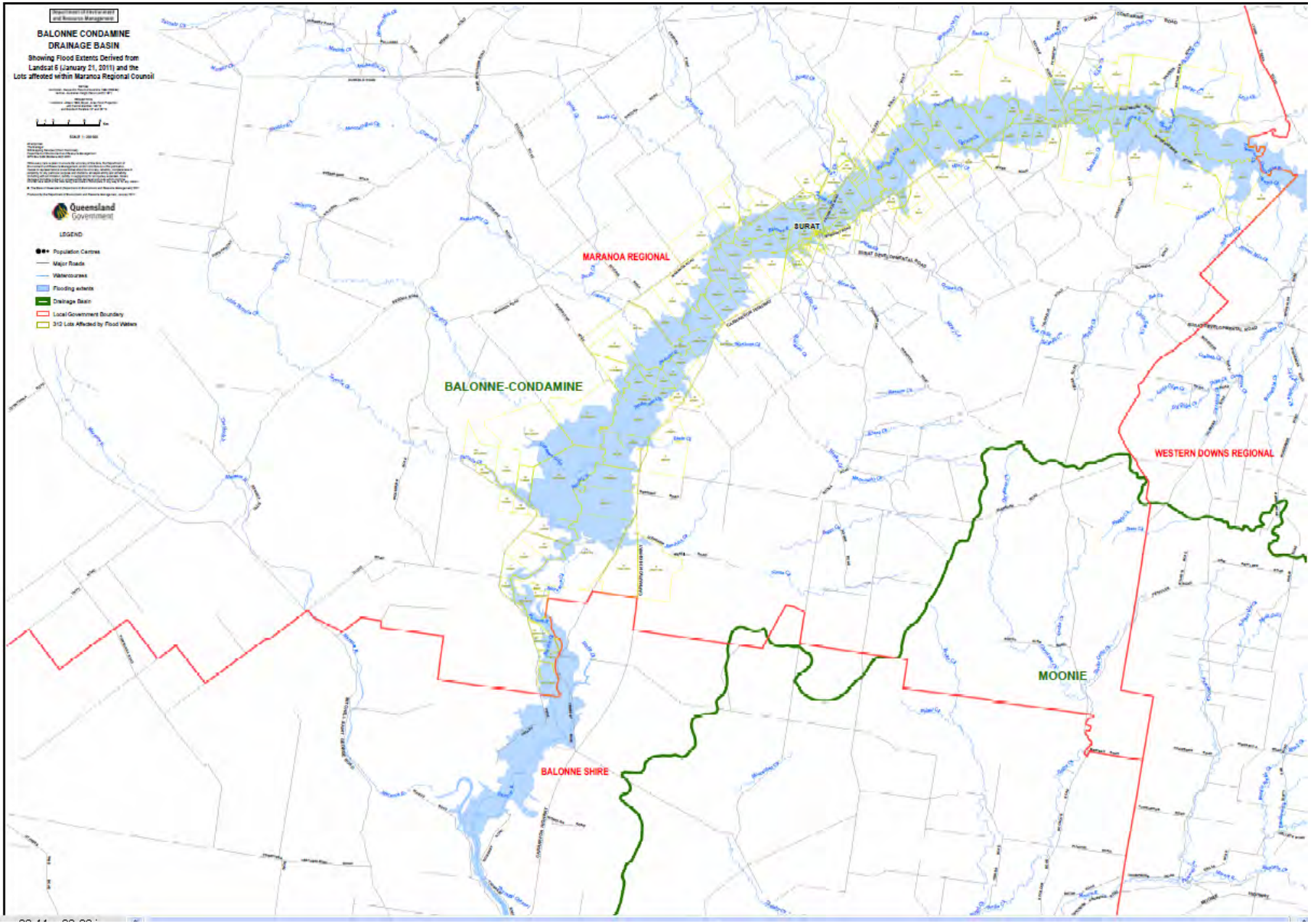
Incorporate available 2011 flood lines

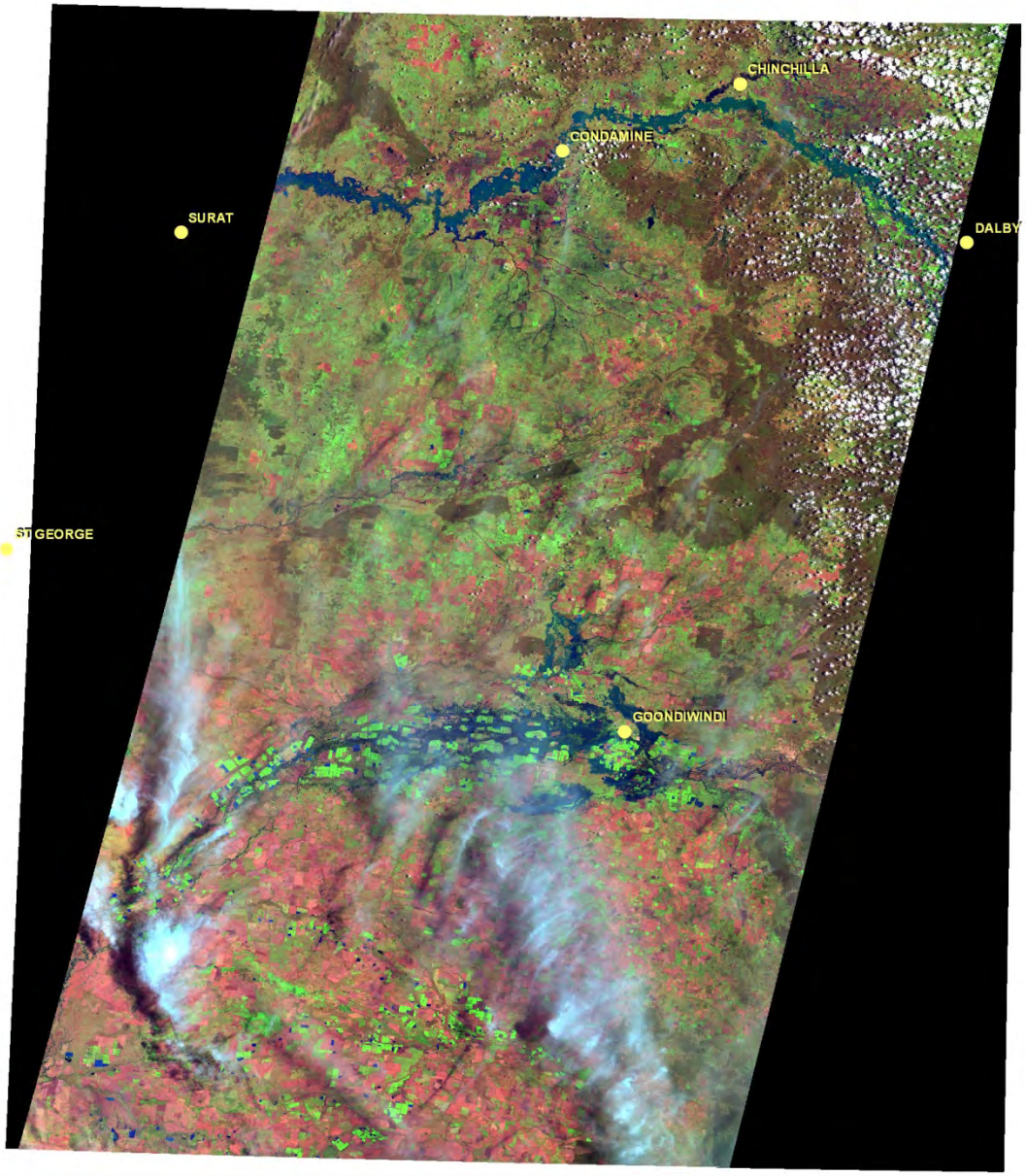
[redacted] *flood lines were determined by photo-interpretation by experienced cartographic staff*



flood lines were also acquired from satellite imagery acquired during the 2011 floods

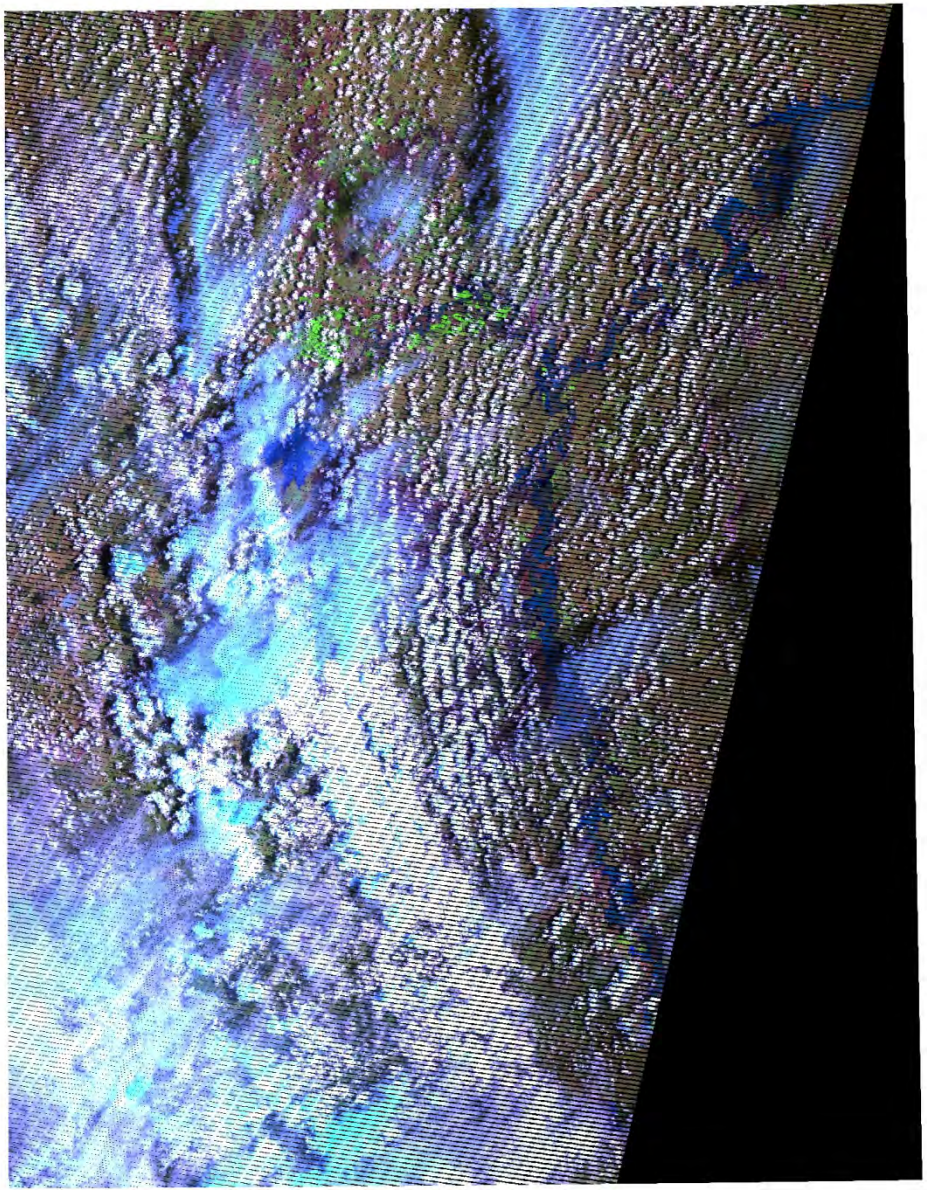
may not have coincided with peak events & can contain errors (wet ground) and assumptions (cloud cover)


BALONNE CONDAMINE
DRAINAGE BASIN
Showing Flood Extents Derived from
Landsat 5 (January 21, 2011) and the
Lots affected within Maranoa Regional Council
Queensland Government
LEGEND
Population Centres
Major Roads
Watercourses
Flooding extents
Drainage Basin
Local Government Boundary
312 Lots Affected by Flood Waters
SURAT
MARANOA REGIONAL
BALONNE-CONDAMINE
WESTERN DOWNS REGIONAL
MOONIE
BALONNE SHIRE



~ *Landsat imagery 15th Jan 2011*

~ *Record flood waters peaked in the Macintyre River at Goondiwindi at 10.64m on the 14th Jan*

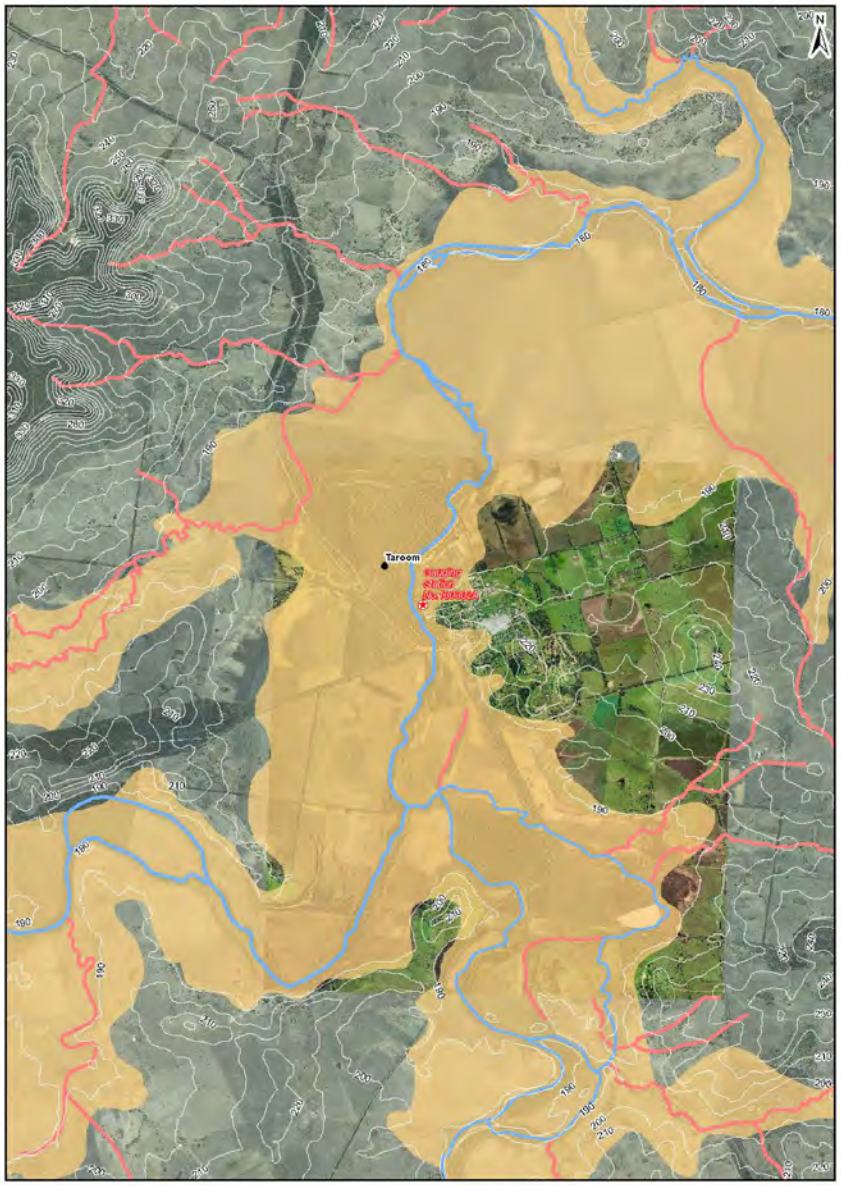


~ *Landsat 7 imagery 5th Jan 2011 over Emerald*

~ *Emerald peaked on 31st Dec*

~ *Highly obscured by cloud*

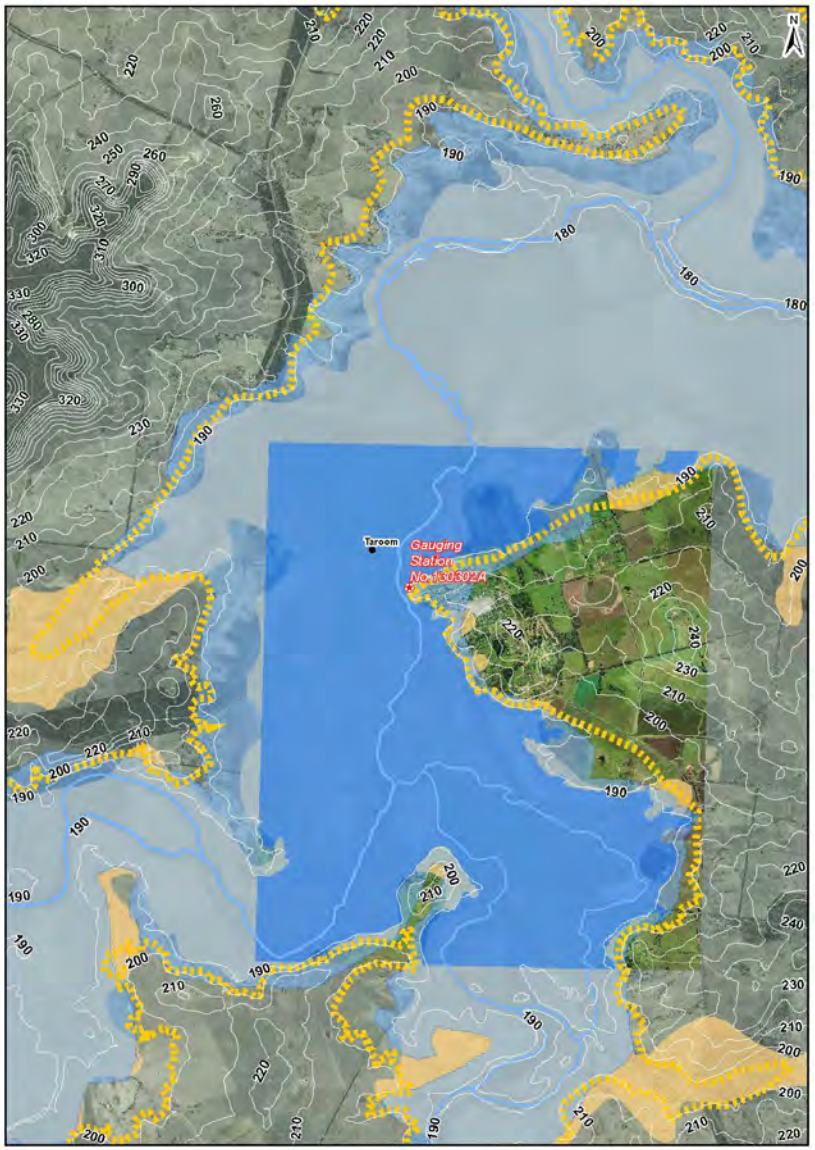
~ *Landsat revisits every 16 days*



STEP 6 –

Contours are introduced as a constraint on the soils, and satellite flood lines data sets

[redacted]

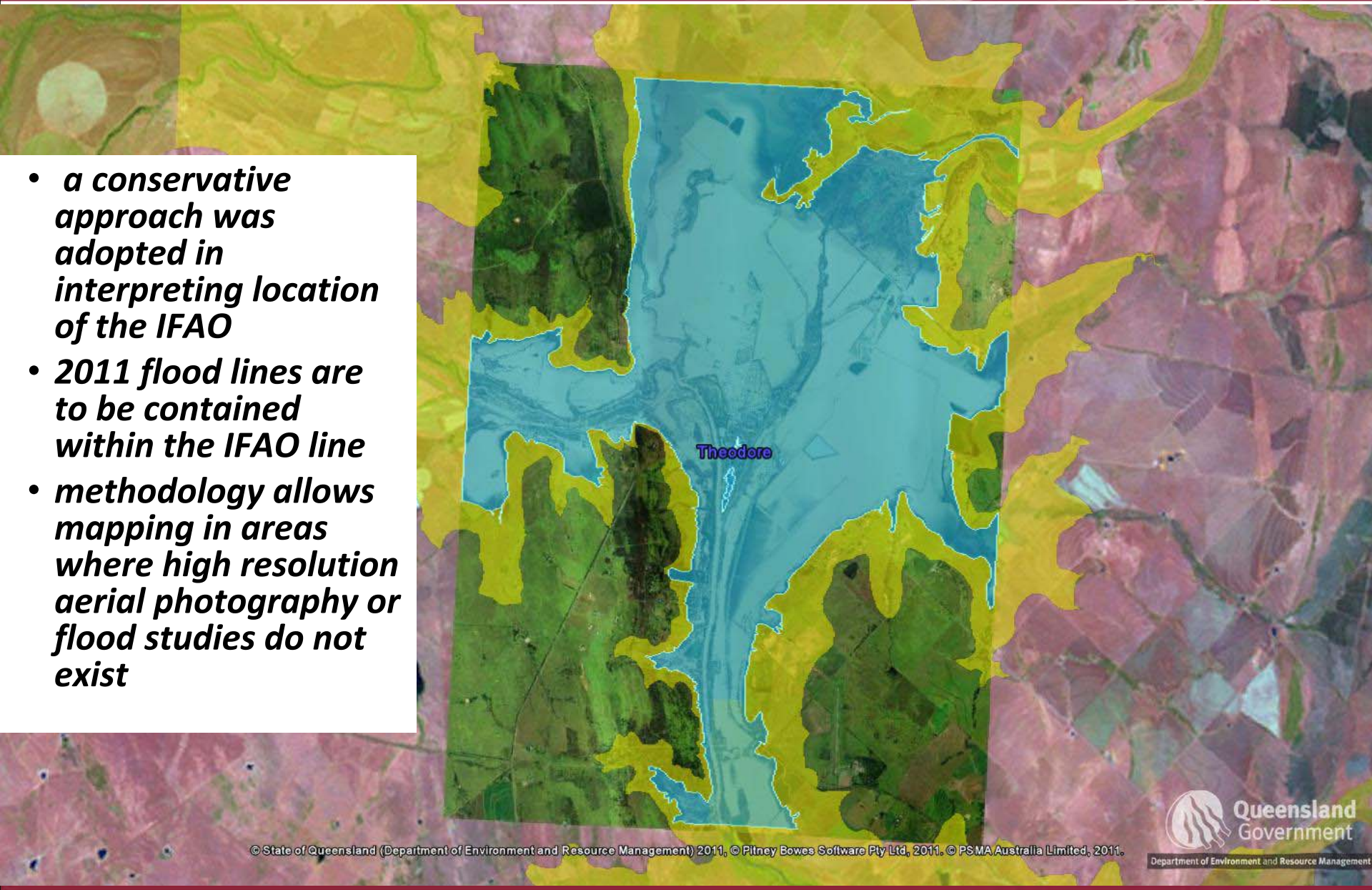


STEP 7 –

Identify the IFAO line – Visually estimate the location of the IFAO using:

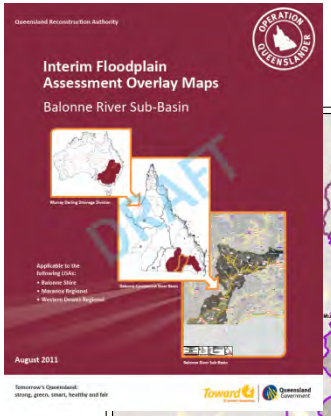
[redacted]
- actual events;
- gauging stations data;
- imagery; and
- other layers.

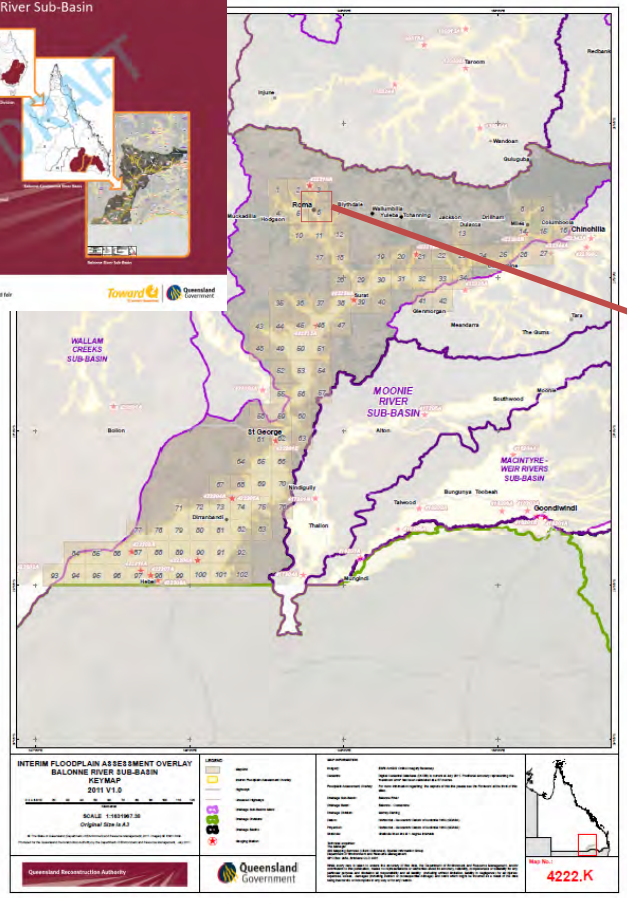
- *a conservative approach was adopted in interpreting location of the IFAO*
- *2011 flood lines are to be contained within the IFAO line*
- *methodology allows mapping in areas where high resolution aerial photography or flood studies do not exist*



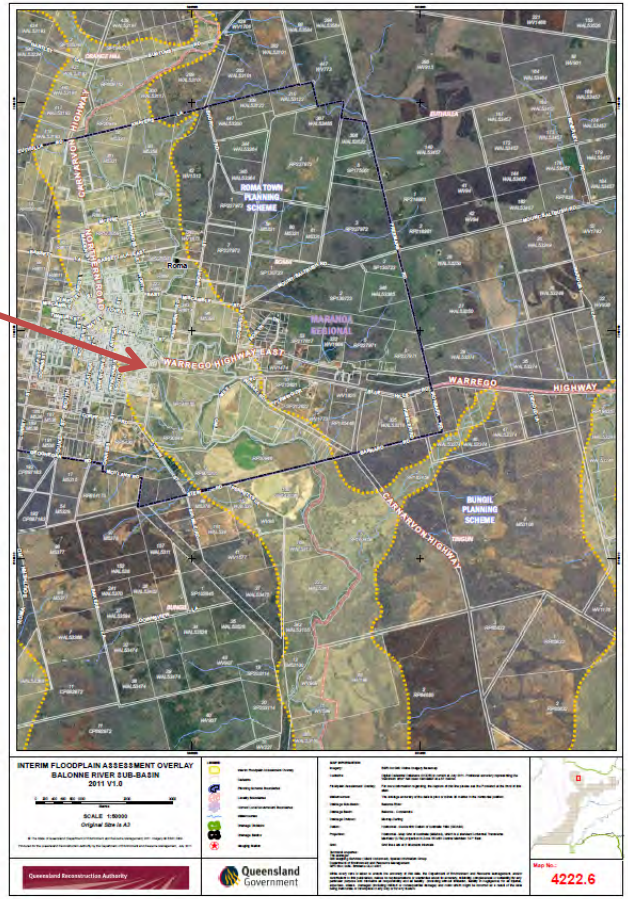
Each Council will be provided with hardcopy mapbook and electronic versions including the digital dataset for each sub-basin applicable to their LGA.

Encouraged to verify and refine the interim line based on local knowledge.





Balonne River Sub-Basin

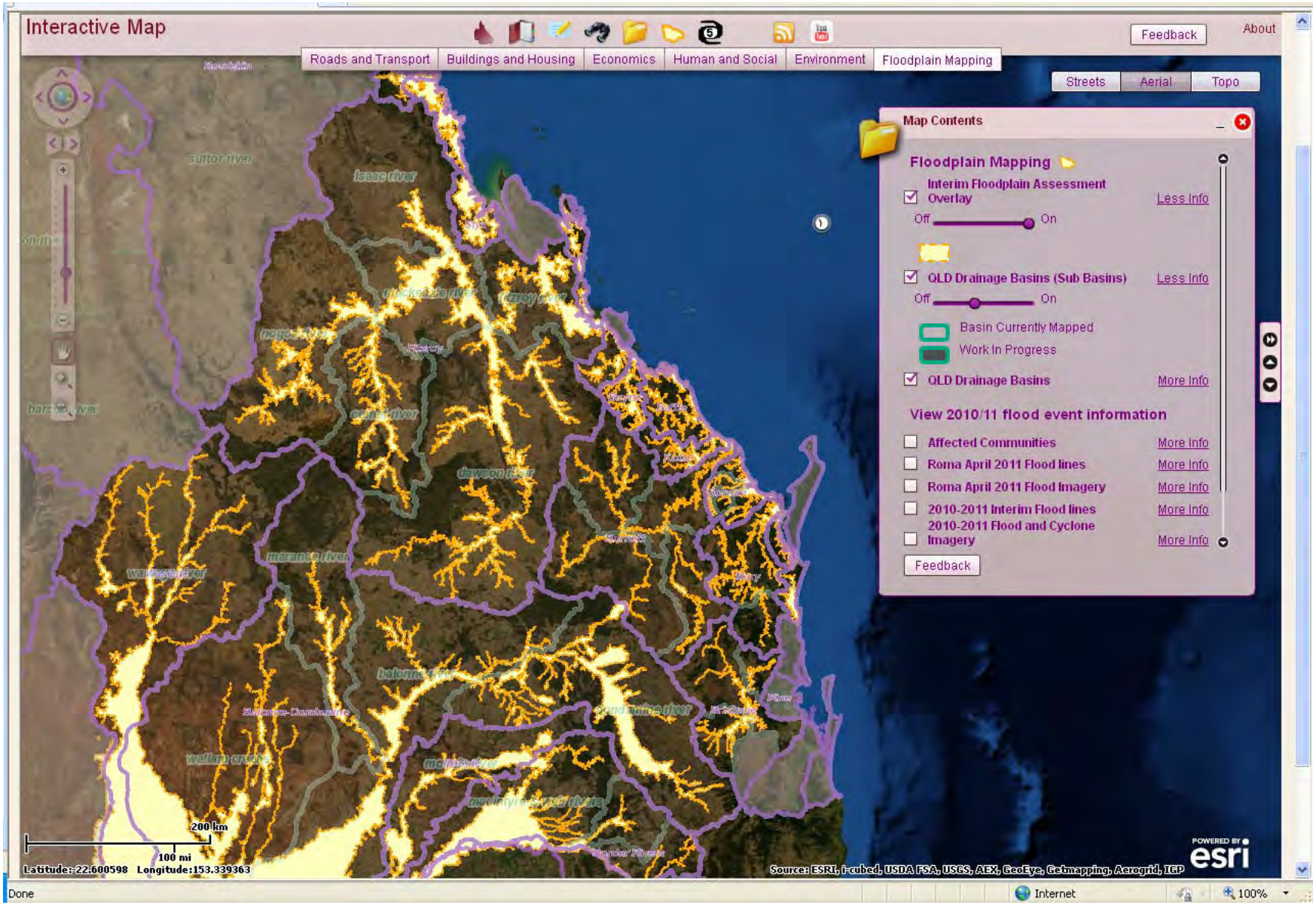


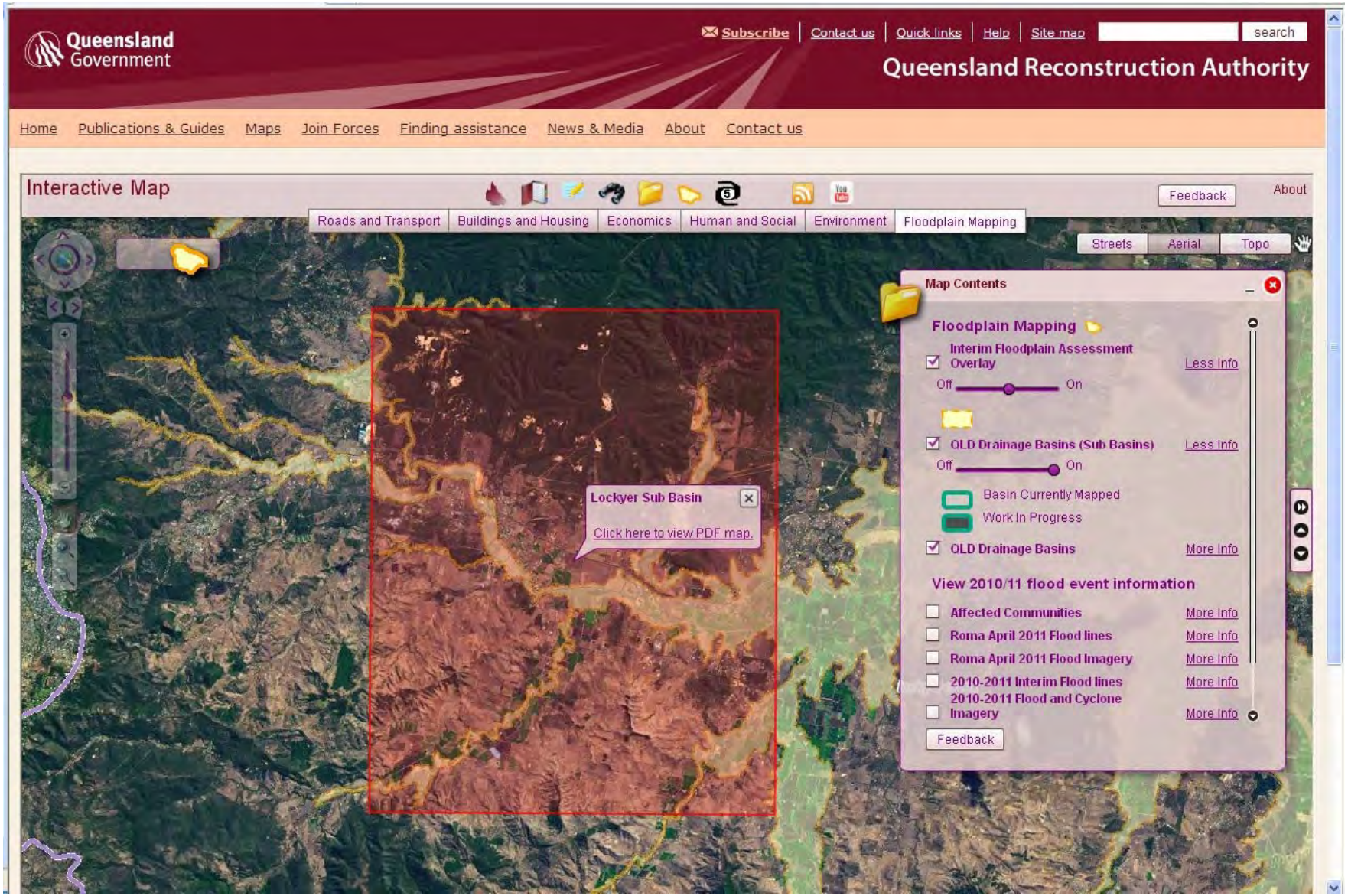
Overlay area for Roma

Level 2 – Local verification

Very important to verify and refine the interim line based on local knowledge.

- **Have we mapped too far, or not far enough along watercourses?**
- **On broader floodplains, is the line too wide or not wide enough?**
- **Within the IFAO areas, have we missed higher ground that should be excluded?**


Interactive Map
Feedback
About
Roads and Transport
Buildings and Housing
Economics
Human and Social
Environment
Floodplain Mapping
Streets
Aerial
Topo
Map Contents
Floodplain Mapping
Interim Floodplain Assessment Overlay
Less Info
Off
On
QLD Drainage Basins (Sub Basins)
Less Info
Off
On
Basin Currently Mapped
Work In Progress
QLD Drainage Basins
More Info
View 2010/11 flood event information
Affected Communities
More Info
Roma April 2011 Flood lines
More Info
Roma April 2011 Flood Imagery
More Info
2010-2011 Interim Flood lines
More Info
2010-2011 Flood and Cyclone Imagery
More Info
Feedback
isaac river
suttor river
dawson river
maranoa river
balonne river
wallam creek
200 km
100 mi
Latitude:-22.600598 Longitude:153.339363
Source: ESRI, i-cubed, USDA FSA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGP
POWERED BY esri
Done
Internet
100%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Buildings and Housing
Economics
Human and Social
Environment
Floodplain Mapping
Streets
Aerial
Topo
Map Contents
Floodplain Mapping
Interim Floodplain Assessment Overlay
Less Info
Off
On
QLD Drainage Basins (Sub Basins)
Less Info
Off
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Basin Currently Mapped
Work In Progress
QLD Drainage Basins
More Info
View 2010/11 flood event information
Affected Communities
More Info
Roma April 2011 Flood lines
More Info
Roma April 2011 Flood Imagery
More Info
2010-2011 Interim Flood lines
More Info
2010-2011 Flood and Cyclone Imagery
More Info
Feedback
Lockyer Sub Basin
Click here to view PDF map.

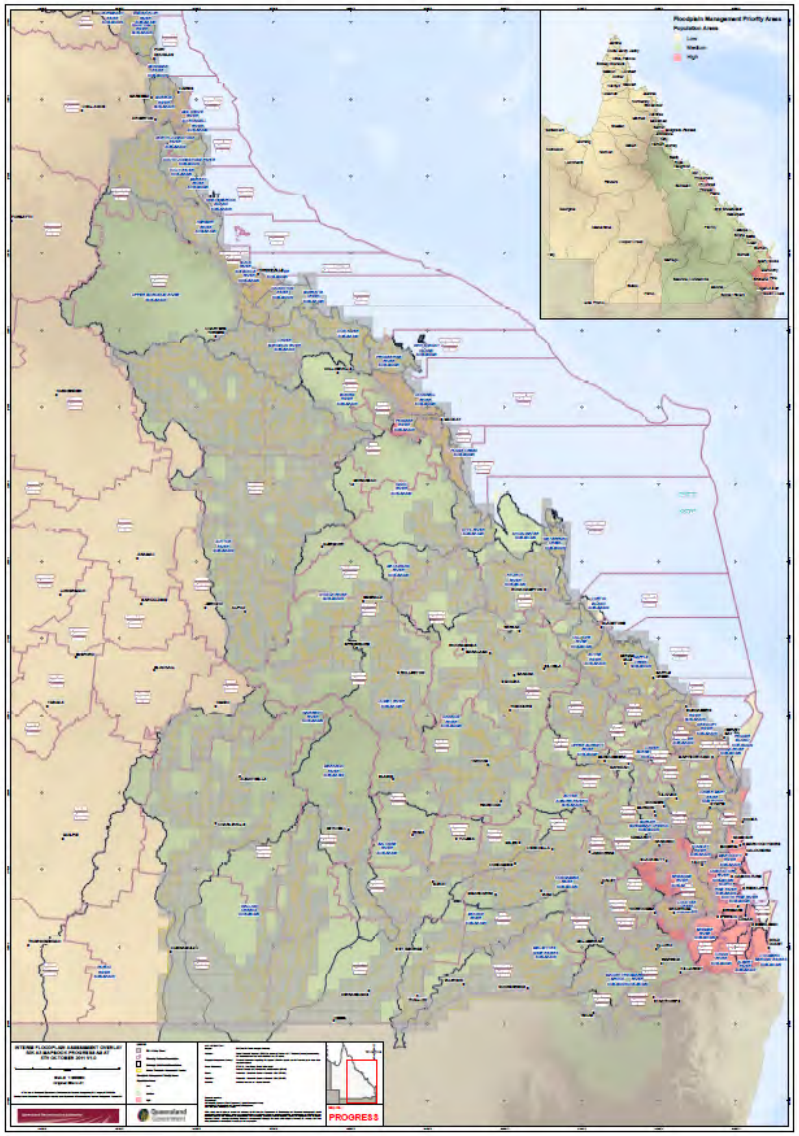
Strengths & weaknesses

Weaknesses:

- Desktop exercise – yet to be ground truthed
- Gauges date from 1911 to 2011 – limited 'highest' recorded data
- Aerial photography obtained f[redacted]s in 2011
- Satellite imagery unlikely to coincide with peak flood and can be cloud affected

Strengths:

- Rapid mapping of whole sub-basins
- Utilises multiple state-wide datasets and experienced interpretation
- 'Interim' line must be verified by local authorities pre adoption
- Released mapping ASAP for verification – not seeking perfection pre release
- Provided in an interactive map viewer, as a 'GIS' layer and as hardcopy mapbooks
- Supplements, does not replace existing (or need for) flood studies



Progress

- 24 river basins delivered by end of July as required.
- [redacted]iver basins now completed as at 5 October (128 in Queensland) representing 40% of Queensland
- 2080 map pages produced to date (A3 @1:50,000 scale)
- 100,000km^2 identified as part of Interim Floodplain Assessment Overlay from these 57 river basins.
- A further 6 river basins will be delivered to QRA by mid October.

Model Code, TSPP & SPP1/03 and Imp[redacted]tion

Provisions needed to support mapping

Turkey mound ....??

Bird's nest.....??

Model Code

Applicable to assessable development as determined by existing planning scheme ie. is unlikely to capture single dwellings (as not assessable under schemes) however w[redacted] picked up by new QDC provisions

Based on principles set out in SPP1/03

Promotes better built form ie. elevation, filling

Front loads questions around flooding impacts – should reduce information requests

Would be triggered as an overlay within the existing scheme

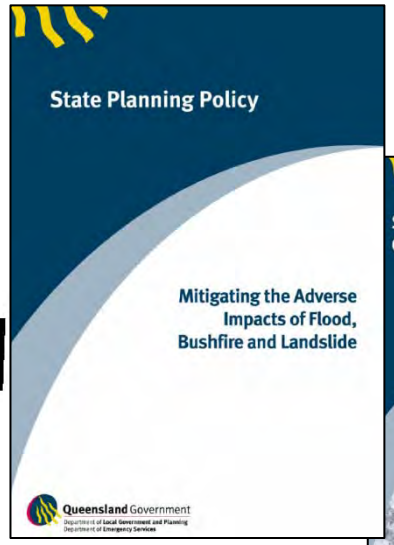
Performance Outcomes	Acceptable Outcomes
PO1. Development siting and layout responds to flooding potential and maintains personal safety at all times.	**For Material Change of Use and Building Work** **AO1.1.** New buildings are: • located outside the overlay area, or; • located on the highest part of the site to minimise entrance of floodwaters; or • elevated; and • provided with clear and direct pedestrian and vehicle evacuation routes off the site. *Note: If part of the site is outside the IFAO Floodplain Mapped area, this is the preferred location for all buildings.* **For Reconfiguring a Lot** **AO1.2.** New lots are: • located outside the overlay area; or • where possible, located on the highest part of the site to minimise entrance of floodwaters. *Note: If part of the site is outside the IFAO Floodplain Mapped area, this is the preferred location for all lots (excluding park or other relevant open space and recreation lots).* *Note: Buildings subsequently developed on the lots created will need to comply with the relevant building assessment provisions under the Building Act 1975.*

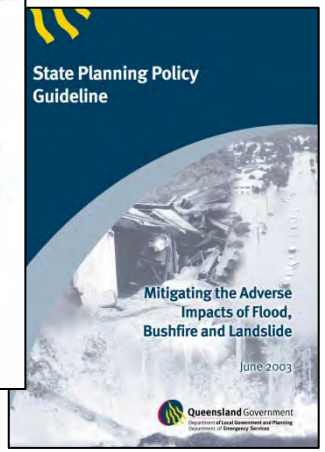
Performance Outcomes	Acceptable Outcomes
Cont'd. PO1. Development siting and layout responds to flooding potential and maintains personal safety at all times.	AO1.3. Road and/or pathway layout provides a safe and clear evacuation path: • if a flood level is adopted[1], by locating entry points into the reconfiguration above the flood level and avoiding culs-de-sac or other non-permeable layouts; or • by direct and simple routes to main carriageways. AO1.4. Signage is provided on site (regardless of whether land will be public or private ownership): • indicating the position and path of all safe evacuation routes off the site; and • if the site contains or is within 100m of a floodable waterway, hazard warning signage and depth indicators are also provided at key hazard points, such as at floodway crossings or entrances to low-lying reserves.
PO2. Development is resilient to flood events by ensuring design and construction account for the potential risks of flooding.	***For Material Change of Use and Building Work (Residential Uses)*** AO2.1. Residential dwellings are not constructed as single-storey slab on ground. *Note: The highset 'Queenslander'-style house is a resilient low-density housing solution in floodplain areas. Higher density residential development should ensure only non-habitable rooms (e.g garages, laundries) are located on the ground floor.* ***For Material Change of Use and Building Work (Non-Residential Uses)*** AO2.2. No Acceptable Outcome specified. *Note: The relevant building assessment provisions under the Building Act 1975 apply to all building work within the IFAO Floodplain Mapped area and must take account of the flood potential within the area.* *Note: Resilient building materials for use within the IFAO Floodplain Mapped area should be determined in consultation with Council, in accordance with the relevant building assessment provisions.*

TSPP & SPP1/03

SPP1/03 currently under review – not just flooding bushfire and landslide components - DCS lead agency.

SPP1/03 includes default state-wide m[redacted] for bushfire and landslide components.





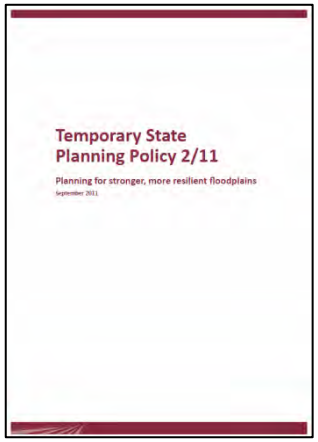
QldRA work to inform the review process.

QldRA work does not replace the SPP1/03 review.

Needed a mechanism by which Councils could adopt mapping as an interim measure until new schemes were developed – TSPP

TSPP – does not require any public notification. Expire after 1 year.

Will commence on 14 November 2011.



TSPP

The effect of this TSPP is to:

- **Suspend the effect of paragraphs A3.1 and A3.2 of Annex 3 of State Planning Policy 1/03 (the SPP)** [redacted]
- **Make a Temporary State Planning Policy providing local government with information necessary to determine the Natural Hazard Management Area (Flood) and then adopt an associated overlay map(s) and code by way of an amendment to an existing planning scheme.**

Annex 1 **of the TSPP outlines the process for designating a NHMA (Flood).**

1. land inundated by a Defined Flood Event (DFE) and identified in a planning instrument; or

2. the Interim Floodplain Assessment Overlay mapping and Model Code provided by the Queensland Reconstruction Authority; or

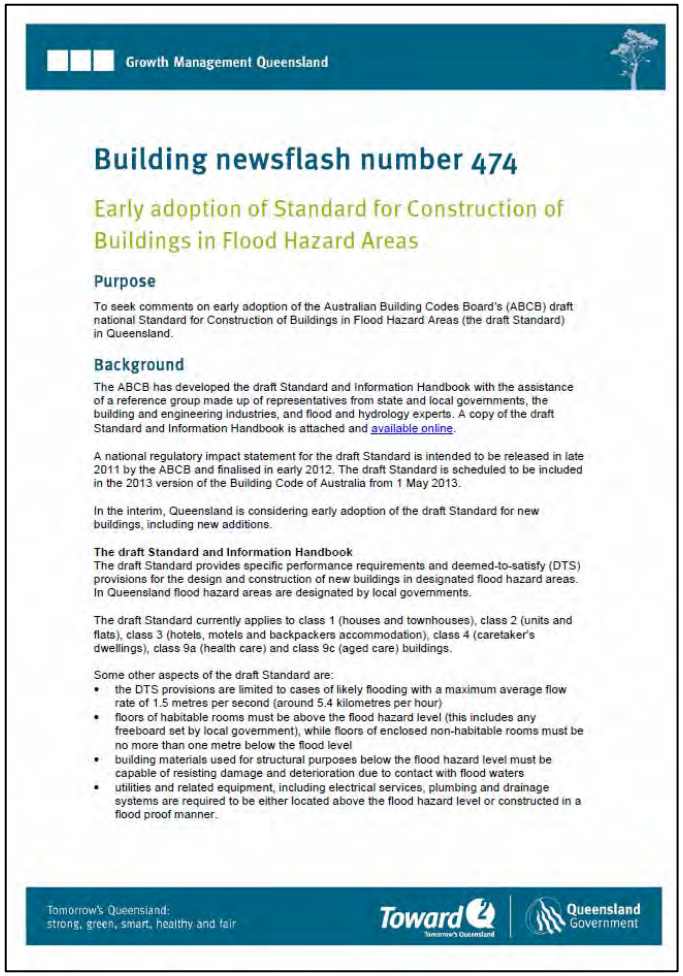
3. the Interim Floodplain Assessment Overlay mapping and Model Code as amended by the relevant Local Government.

Building Provisions

Building Codes Queensland is proposing to adopt a draft national standard for the construction of buildings in flood hazard areas in late November 2011.

The draft standard will apply to new dwellings, including houses, units, hotels, hospitals and aged care facilities, and potentially additions to these types of buildings.

The application of the acceptable solutions, and in some cases performance requirements, will be limited to areas that are not subject to storm surge, mudslide or flow rates above 1.5m/s. In these cases, buildings will need to be engineered using first principles.



Growth Management Queensland

Building newsflash number 474

Early adoption of Standard for Construction of Buildings in Flood Hazard Areas

Purpose

To seek comments on early adoption of the Australian Building Codes Board's (ABCB) draft national Standard for Construction of Buildings in Flood Hazard Areas (the draft Standard) in Queensland.

Background

The ABCB has developed the draft Standard and Information Handbook with the assistance of a reference group made up of representatives from state and local governments, the building and engineering industries, and flood and hydrology experts. A copy of the draft Standard and Information Handbook is attached and available online.

A national regulatory impact statement for the draft Standard is intended to be released in late 2011 by the ABCB and finalised in early 2012. The draft Standard is scheduled to be included in the 2013 version of the Building Code of Australia from 1 May 2013.

In the interim, Queensland is considering early adoption of the draft Standard for new buildings, including new additions.

The draft Standard and Information Handbook

The draft Standard provides specific performance requirements and deemed-to-satisfy (DTS) provisions for the design and construction of new buildings in designated flood hazard areas. In Queensland flood hazard areas are designated by local governments.

The draft Standard currently applies to class 1 (houses and townhouses), class 2 (units and flats), class 3 (hotels, motels and backpackers accommodation), class 4 (caretaker's dwellings), class 9a (health care) and class 9c (aged care) buildings.

Some other aspects of the draft Standard are:

- the DTS provisions are limited to cases of likely flooding with a maximum average flow rate of 1.5 metres per second (around 5.4 kilometres per hour)
- floors of habitable rooms must be above the flood hazard level (this includes any freeboard set by local government), while floors of enclosed non-habitable rooms must be no more than one metre below the flood level
- building materials used for structural purposes below the flood hazard level must be capable of resisting damage and deterioration due to contact with flood waters
- utilities and related equipment, including electrical services, plumbing and drainage systems are required to be either located above the flood hazard level or constructed in a flood proof manner.

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After the commencement of these new provisions (late November 2011)

- The flood standard is proposed to apply under the QDC.

- Building Regulation 2006 proposed to be amended to give Local Governments the ability to declare a flood level/s for an area and also declare an associated flow rate or identify areas with low or minimal water flow.

- If a Local Government designates a flood hazard area but does not provide information on likely flood levels and flow rates/areas of inactive flow within that area, an applicant for a building approval may need to engage a hydrologist to determine flood characteristics for the site. Councils therefore encouraged to declare flood levels.

- Local Governments will also have the ability to set a freeboard at a higher level to that specified in the QDC (default freeboard of 300mm).

- If declaring a higher freeboard than that in the QDC, it is requested that Local Governments make a clear distinction between the flood level and the freeboard i.e. the flood level does not already include a freeboard. This will ensure that the QDC does not require an additional freeboard where one has already been included by a Local Government.

Implementation

Step 1:
Council obtains toolkit

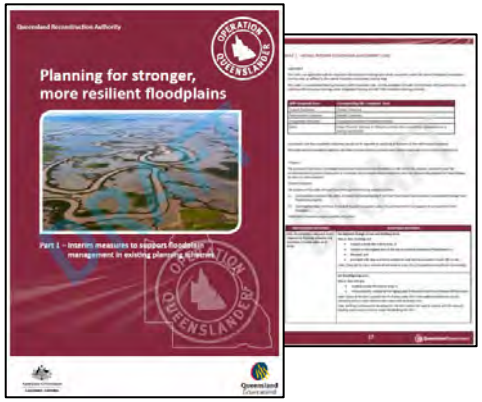
1. Guideline
2. Model Code
3. Mapping
Hard copy mapbook
Digital copy mapbook
Digital datasets

Step 2: Council commences review process including the mapping product and the planning scheme provisions

Use existing studies knowledge, photographs to visually inspect the mapping. QRA to visit the Council.

Step 3: Council resolves to undertake a minor scheme amendment

a) Adopt mapping and Model Code as provided by the Authority unchanged; or
b) Adopt Model Code as provided by the Authority and adopt locally amended mapping; or
c) Adopt mapping as provided by the Authority and adopt amended Model Code; or
d) Adopt locally amended mapping and amended Model Code.



Implementation cont'd.

Step 3a:
Designate as NHMA (Flood) and nominate Flood Level

Supports Building provisions

Step 4: Council forwards amendment package to DLGP

If package proposes amendment to the mapping DLGP forwards to QldRA for verification

Seek to have amendment package to Minister for consideration within 10 days of receipt

Step 5: Council incorporates into existing scheme

Step 6: Assessment of any new applications triggered in the "Floodplain Overlay Area" against the Floodplain Code

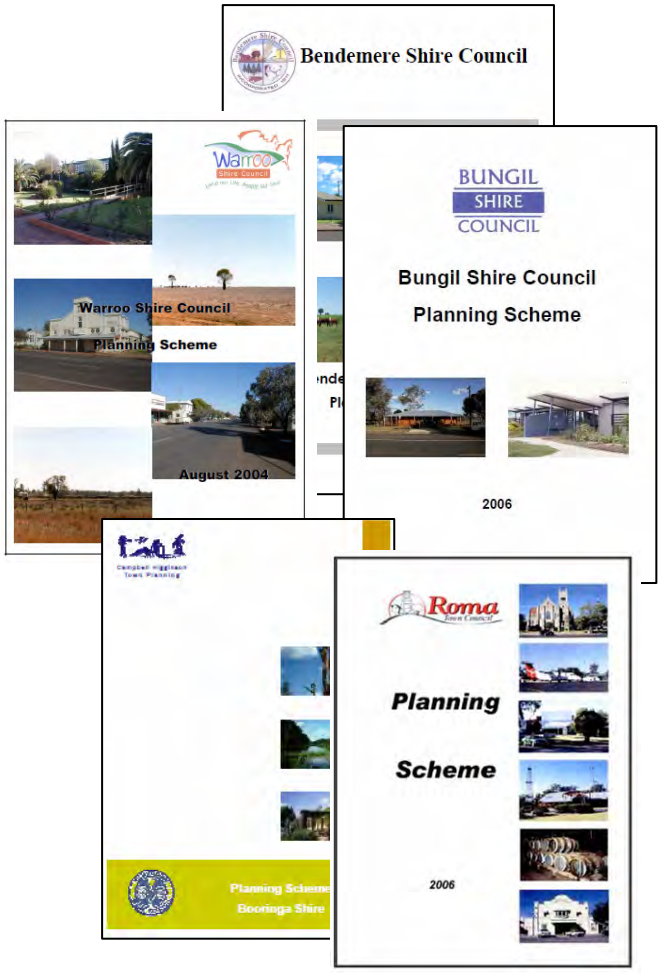
TLPIs are also an option however preference is for scheme amendment

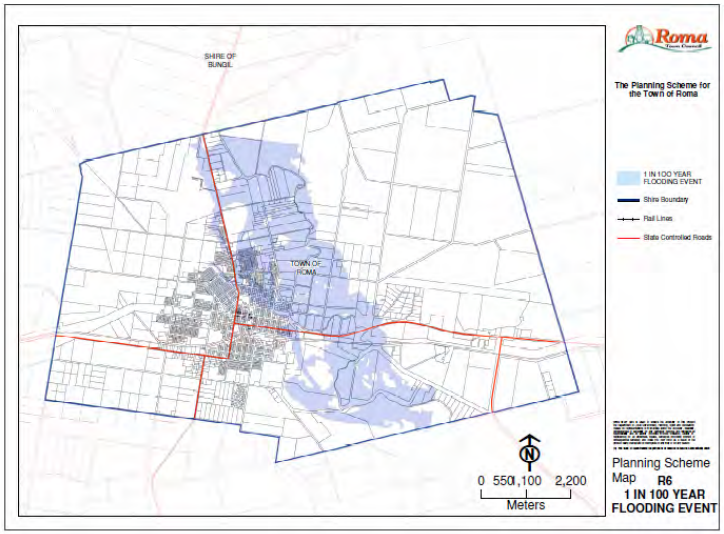
Implementation...Maranoa Regional Council

Roma Planning Scheme

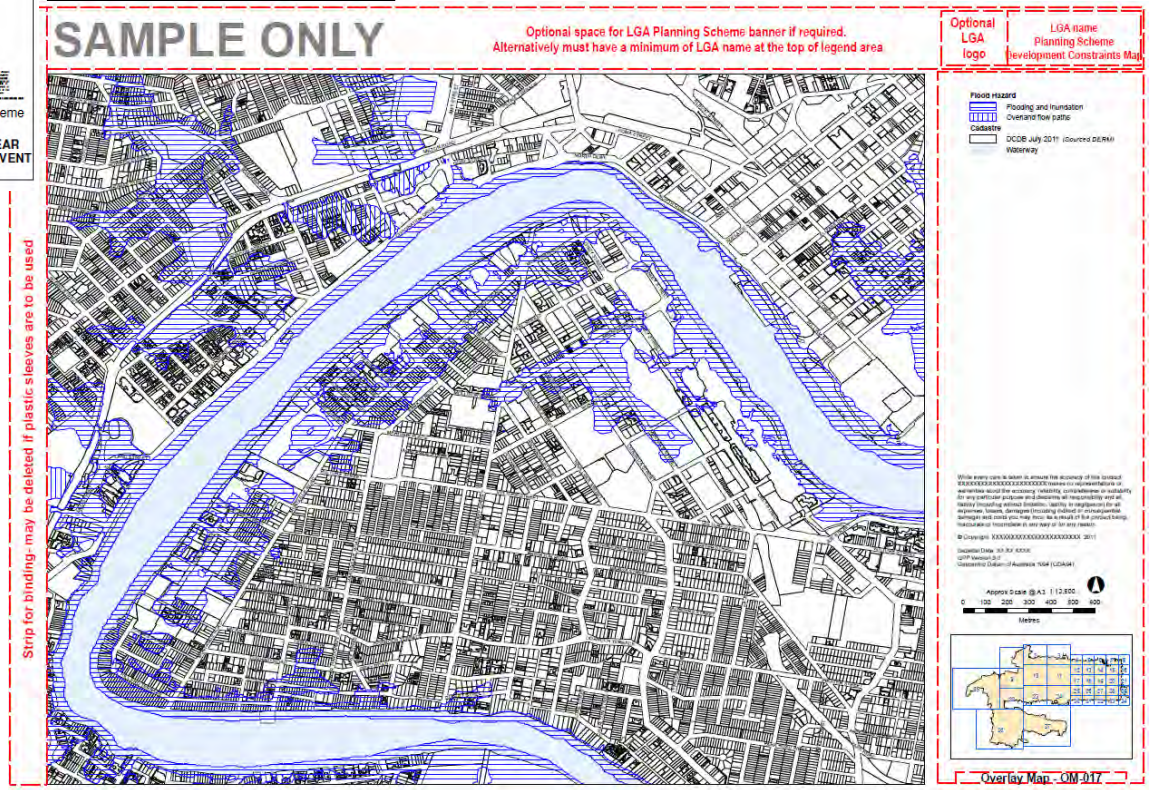
- Include an additional Code in Part 5 - Codes, Division 1, titled, **'5.4 Floodplain Assessment Code'**. This new section can include the provisions o[redacted] for the Floodplain Assessment overlay as provided by the tool kit. The Floodplain Assessment Code can make reference to the '**Floodplain Assessment Area - R6'.** This new Floodplain Assessment Area map may be modified to incorporate the previous '**R6 - 1 in 100 Year Flood Event**'

- All other schemes could follow a similar process and adopt the Code as a new section under **Part 5 – Codes**. All schemes could adopt the mapping as a new **Regulatory Map** ie. R6 in Bendemere.





QRA can assist in the preparation of QPP template for the overlay code map



Summary

- Roadtrip to all Councils where mapping has been completed
- Voluntary – Councils choose to adopt
- QRA happy to assist Councils wanting to adopt [redacted]
- Provisions can be fit-for-purpose
- TSPP 2/11 provides Councils the ability to adopt the Mapping and Model code as a NHMA (Flood)
- Fast-tracked minor scheme amendment consideration through the DLGP
- Consultation until 11 November 2011 –
- Part 2 will be ready for release in DRAFT mid-November

Improving floodplain management through the land use planning process

Questions?

[redacted]

www.qldreconstruction.org.au