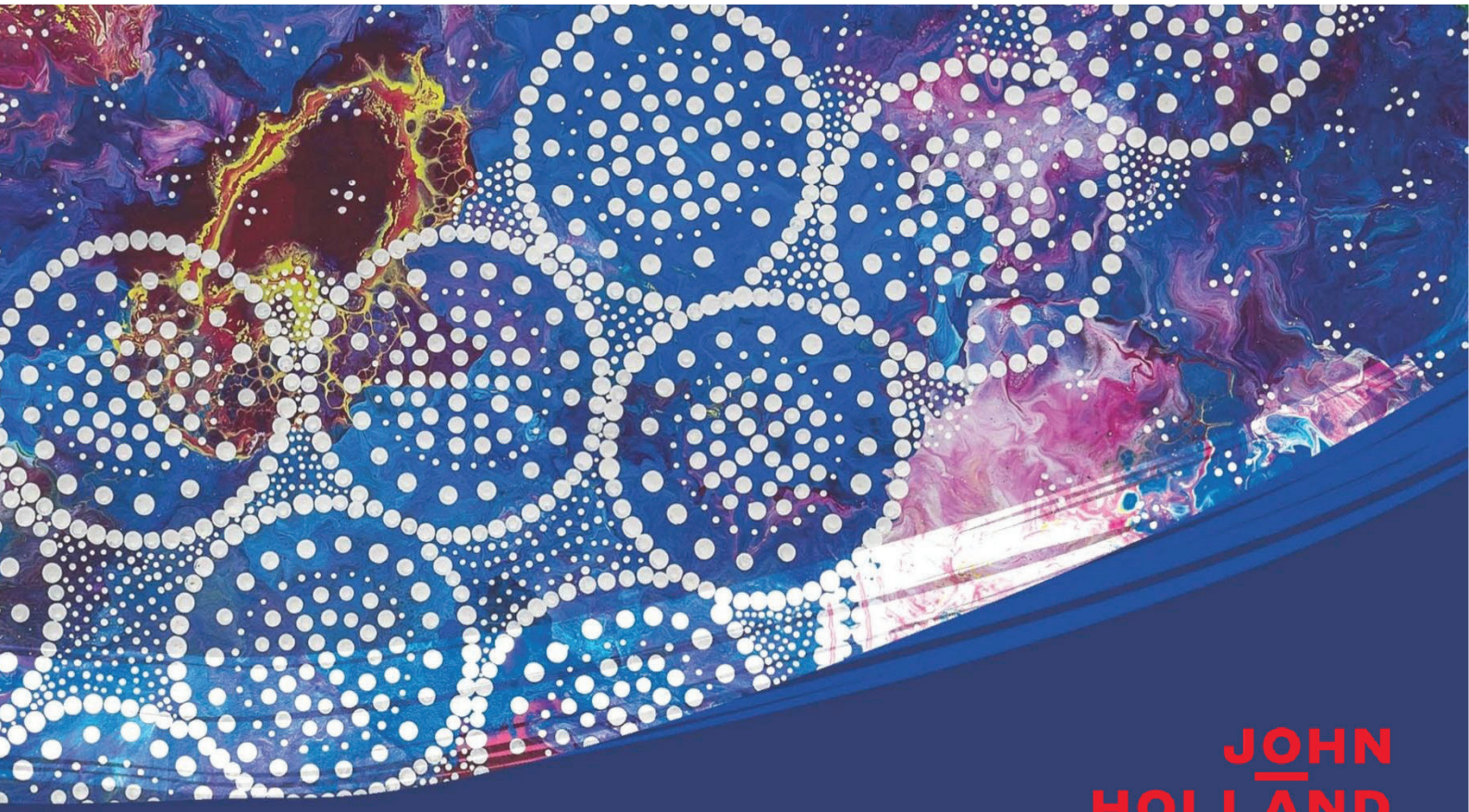


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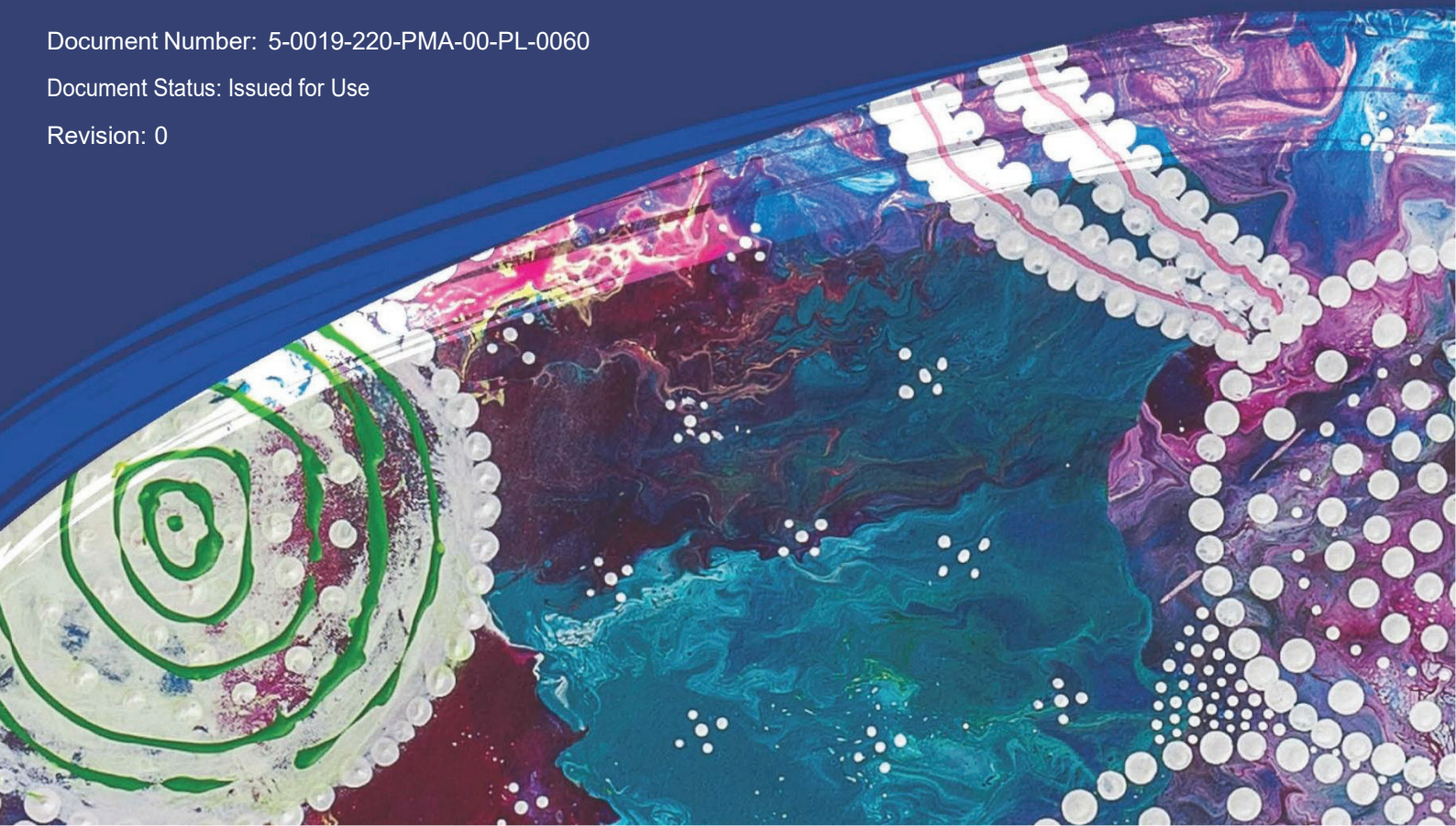
INLAND RAIL
ILLABO TO STOCKINBINGAL PROJECT

Sub Plan: Flood Emergency Management

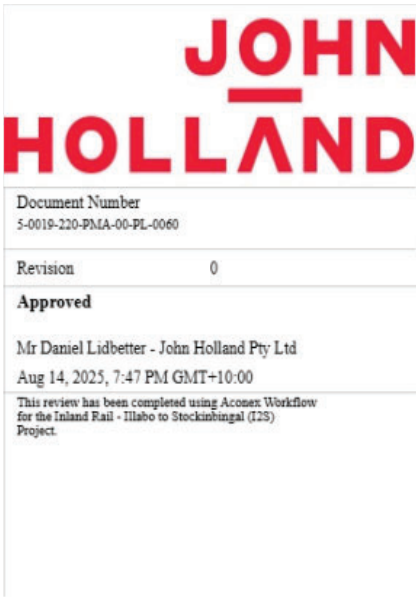
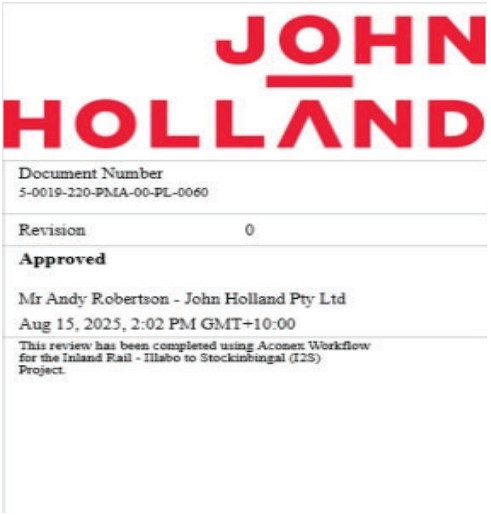
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1 Revisions and Distribution

1.1 Revisions

Draft issues of this document are identified as Revision A, B, C etc. Following acceptance by the document approver, the first finalised revision will be Revision 0. Subsequent revisions will have an increase of "1" in the revision number (1, 2, 3 etc.).

1.2 Distribution

The controlled master version of this document is available for distribution as appropriate and maintained on the document management system being used on the project. All circulated hard copies of this document are deemed to be uncontrolled.

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2 References, Definitions and Abbreviations

2.1 Definitions and Abbreviations

Definitions and abbreviations to be applied to the Flood Emergency Management Sub-plan are listed Table 2-1.

Table 2-1 Definitions and abbreviations

Term	Definition
AEP	Annual Exceedance Probability. The probability that a design event (rainfall or flood) has of occurring in any 1-year period.
AMS	Activity Method Statement
ARR	Australian Rainfall and Runoff (Ball et al, 2019)
ARTC	Australian Rail Track Corporation
BCS	Biodiversity, Conservation and Science Division of the Environment and Heritage Group of the NSW Department of Climate Change, Energy, the Environment and Water
BoM	Bureau of Meteorology
Catchment	The area drainage by a stream or body of water or the area of land from which water is collected.
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CCS	Community Communication Strategy
CM	Construction Manager
CPESC	Certified Professional is Erosion and Sediment Control
CSEM	Community and Stakeholder Engagement Manager
CSSI	Critical State Significant Infrastructure
DCCEEW	Department of Climate Change, Energy, the Environment and Water
Design Rainfall	Design rainfalls are based on the statistical analysis of historical rainfall data to determine the design rainfall depth (mm) or design intensity (mm/hr) corresponding to selected durations and frequencies (BOM, 2015).
DPIE	Department of Planning Industry and Environment
DS	Discipline Superintendent (Rail, Earthworks, etc)
Earthworks	All operations involved in loosening, excavating, placing, shaping and compacting soil or rock.
Embankment	An earthen structure where the road (or other infrastructure) subgrade level is about the natural surface.
ESM	Environment and Sustainability Manager
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act
EPL	Environment Protection Licence

Term	Definition
EPO	Environmental performance outcomes
EP&A Act	*Environmental Planning and Assessment Act (1979)*
ER	Environmental Representative
ERSED	Erosion and sediment
FEMP	Flood Emergency Management Sub-Plan
FERP	Flood Emergency Response Plan
GIS	Geographic Information System
GMR	Global Mandatory Requirement
GS	General Superintendent
HSEQS	Health, Safety, Environment, Quality and Sustainability
IMS	Integrated Management System
IFD	Intensity Frequency and Duration
IRPL	Inland Rail
ISC	Infrastructure Sustainability Council
I2S	Illabo to Stockinbingal
JHG	John Holland Group
LFP	Local Flood Plan
LGA	Local Government Area
MHL	Manly Hydraulics Laboratory
NSW	New South Wales
NSW SES	New South Wales State Emergency Services
PD	Project Director
PDCA	Plan-Do-Check-Act
PESCP	Progressive Erosion and Sediment Control Plans
Project	Inland Rail – Illabo to Stockinbingal Project
RFS	Rural Fire Service
RMMs	Revised Mitigation Measures
SAP	Sensitive Area Plan
SEARS	Secretary's Environmental Assessment Requirements
SEMP	Site Establishment Management Plan
SEP	Site Environment Plan
SES	State Emergency Service
SEWS	Standard Emergency Warning Signal
SM	Safety Manager
SPE	Senior Project Engineer
SSFP	Site-specific flood preparation plan

Term	Definition
SWMSP	Soil and Water Management Sub-plan
TRA	Task Risk Assessment
TfNSW	Traffic, Transport and Access Management Sub-Plan
TWAFMP	Temporary Workforce Accommodation Facility Management Plan
WRA	Workplace Risk Assessment

2.2 Compliance Roadmap

The following section provides a tabular representation of the Project obligations and requirements as described in all licenses and approvals and a reference link to detail how the Inland Rail - Illabo to Stockinbingal Project (I2S or Project) intend to comply.

This Flood Emergency Management Sub-plan (FEMP) provides a consistent approach to address the requirements from the Infrastructure Approval (CSSI-9406), Submissions Report and associated Revised Mitigation Measures (RMMs) and other relevant external permits, licenses or approvals which is detailed throughout this section. A cross reference is also included to indicate where each Condition of Approval (CoA) is addressed in this FEMP or other Project management documentation.

2.2.1 State Conditions of Approval

Requirements from the Infrastructure Approval (CSSI-9406) relevant to this FEMP are provided in Table 2-2.

Table 2-2 Minister's Conditions of Approval

Condition Number	Condition Requirements	Document Reference
A1	The Proponent must carry out the CSSI in accordance with the terms of approval and generally in accordance with the: • Inland Rail – Illabo to Stockinbingal Environmental Impact Statement (ARTC 2022); • Illabo to Stockinbingal Project Response to Submissions (ARTC 2023); • I2S – Mitigation Measures (Inland Rail, April 2024);	Section 3
A2	The CSSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in accordance with the documents listed in Condition A1 unless otherwise specified in, or required under, this approval.	Note
A3	In the event of an inconsistency between: (a) the conditions of this approval and any document listed in Condition A1(a) to (f) inclusive, the conditions of this approval will prevail to the extent of the inconsistency; and (b) any document listed in Condition A1(a) to (f) inclusive, the most recent document will prevail to the extent of the inconsistency. Note: For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.	Note
A4	The Proponent must comply with the written requirements or directions of the Planning Secretary, including in relation to: (a) the environmental performance of the CSSI; (b) any document or correspondence in relation to the CSSI;	Note

<table>
<tr><th>Condition Number</th><th>Condition Requirements</th><th>Document Reference</th></tr>
<tr><td></td><td>(c) any notification given to the Planning Secretary under the terms of this approval;

(d) any audit of the construction or operation of the CSSI;

(e) the terms of this approval and compliance with the terms of this approval (including anything required to be done under this approval);

(f) the carrying out of any additional monitoring or mitigation measures; and

(g) in respect of ongoing monitoring and management obligations, compliance with an updated or revised version of a guideline, protocol, Australian Standard or policy required to be complied with under this approval.</td><td></td></tr>
<tr><td>C14</td><td>CEMP(s) (and relevant CEMP sub-plans) must be submitted to the Planning Secretary for approval except those permitted to be endorsed by others pursuant to a CEMF approved by the Planning Secretary under Condition C1.</td><td>Section 3.6</td></tr>
<tr><td>C15</td><td>Where a CEMP (and relevant CEMP sub-plans) requires the Planning Secretary’s approval, the CEMP (and relevant CEMP sub-plans) must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month before the commencement of construction, or where construction is staged, no later than one (1) month before the commencement of each stage.</td><td>Section 3.6</td></tr>
<tr><td>C17</td><td>Except as provided by Condition C1, the following CEMP Sub-plans must be prepared in consultation with the relevant state agencies, relevant councils and RAPs identified for each CEMP Sub-plan. Evidence of consultation must be provided consistent with Condition A10.

<table><tr><th></th><th>Required CEMP Sub-plan</th><th>Relevant authorities to be consulted for each CEMP Sub-plan</th></tr><tr><td>(f)</td><td>Flood Emergency Management</td><td>SES, BCS and relevant councils</td></tr></table></td><td>Section 4</td></tr>
<tr><td>C18</td><td>The CEMP Sub-plans listed in Condition C17 must state how:

a) the environmental performance outcomes identified in the documents listed in Condition A1, as modified by these conditions, will be achieved;

b) the mitigation measures identified in the documents listed in Condition A1, as modified by these conditions will be implemented;

c) the relevant terms of this approval will be complied with; and

d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</td><td>a) Section 3.4

b) Section 10

c) Section 10, 11

d) Section 10, 11, 12 and Appendix E

SWMSP</td></tr>
<tr><td>C24</td><td>The Flood Emergency Management Sub-plan must include:

a) measures for managing flood risks during construction and address flood recovery;

b) consideration of flood risks associated with construction works;

c) details of the management and maintenance of flood mitigation measures; and

d) measures for the management and mitigation of flood impacts affected by temporary or permanent fencing and culverts, including installation of flood mitigation measures as soon as practical after construction of the relevant drainage structure.</td><td>Section 5

Section 5

a) Section 8, 9 and 10

b) Section 6, 7 and Appendix E

c) Section 10

d) Section 10</td></tr>
</table>

Condition Number	Condition Requirements	Document Reference
C26	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary or endorsed by the ER (as applicable and as identified in the CEMF approved under Condition C1). The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been endorsed by the ER and approved by the Planning Secretary or ER.	Section 3.6
E47	All practicable measures must be implemented to ensure the design, construction and operation of the CSSI will not adversely affect flood behaviour, or adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.	Section 10.1 Flood Design Verification Report and associated design documentation
E123	Permanent spoil mounds are to be located: (a) within the rail corridor; (b) at least 50 metres from any watercourse or culvert or where there is a risk of erosion or flood impacts during any flood event ; (c) at least 500 metres from any residence; and (d) outside the drip lines of trees located on private property. Note: For the purpose of Condition E123(d), the Proponent must not affect trees outside of the rail corridor for the purpose of preventing those trees' driplines overhanging spoil mounds.	Section 10.1 Flood Design Verification Report and associated design documentation SWMSP
E124	Permanent spoil mounds are to comply with the following requirements: (a) maximum height must not exceed the top height of the upgraded rail line directly parallel to the spoil mound or two metres (whichever is the lesser); (b) not result in the clearing or covering of native vegetation beyond that described in the documents listed in Condition A1; (c) not result in heritage impacts beyond that described in the documents listed in Condition A1; (d) not result in additional changes to the upstream flooding regime beyond those described in the documents listed in Condition A1; (e) not affect the downstream flood regime; (f) not impede the flow of water through culverts; (g) not contain any contaminated soil classified as unsuitable for the proposed land use, acid sulphate soils or green waste; (h) are to be stabilised during construction of the CSSI; and (i) are to be stabilised following completion of construction of the CSSI.	Section 10.1 Flood Design Verification Report and associated design documentation SWMSP

2.2.2 Revised Mitigation Measures

The revised mitigation measures (RMMs) from the Submissions Report relevant to this FEMP are provided in Table 2-3.

Table 2-3 RMMs applicable to this FEMP

Ref.	Issue	Mitigation Measure	Timing	Document Reference
HS-4	Flood and emergency response	A flood and emergency response plan would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential impacts of construction activities on flood behaviour and bushfire risk as far as practicable. It would also outline measures to manage emergency responses during construction.	Prior to Construction	This FEMP
HF-5	Flooding impacts	Construction planning and the layout of construction work sites and compounds would be undertaken with consideration of overland flow paths and flood risk, avoiding flood prone land and flood events where practicable.	Prior to Construction During Construction	Section 10
		Prior to construction, a flood warning system will be established in for the Dudauman Creek catchment, upstream of construction areas for use during construction, with reference to Bureau of Meteorology forecasts.		Section 8
		Following development of the construction methodology, critical stages of the works would be identified and tested in the flood model to identify potential construction phase flooding impacts. The tests should simulate the following in the model for a number of construction phase scenarios as required:		Section 10 and 10.1 Flood Design Verification Report and design documentation
		key stages of temporary embankment opening during demolition/reconstruction that could pass additional flow downstream		
		location and level of long term construction facilities (such as compounds, access tracks and stockpiles) that could obstruct and divert flows		
		location and level of temporary works in waterways and overland flow paths during bridge and culvert construction that could obstruct and divert flows.		
		The construction phase flood modelling should be iterated through sufficient scenarios to inform planning of the works such that construction phase flood impacts are identified and managed accordingly.		Section 10
		The outcomes of the modelling should be used to inform the construction phase flood emergency response plan (mitigation measure HS-4).		Section 10 Section 9
		The flood warning system outputs should be used to set trigger levels and associated actions in the flood emergency response plan.		Section 8.3 Section 10
AHF-1	Hardstand areas	Minimising hard stand areas in the vicinity of camp buildings to minimise increases in runoff.	During Construction	TWAFMP Section 10
AHF-3	Stormwater management	Stormwater drainage infrastructure would be included under proposed access tracks and roads to maintain existing local overland flows to the farm dam to the north of the accommodation camp site	Prior to Construction During Construction	TWAFMP Section 10
AHF-4	Flood management	A stormwater detention basin would be constructed at the accommodation camp (indicative location would be in the	Prior to Construction	TWAFMP

Ref.	Issue	Mitigation Measure	Timing	Document Reference
		northern portion of the lot) to capture stormwater runoff from the car park during the 10% AEP flood event and will be designed in accordance with the Soil and Water Management Plan (refer to WQ-3).	During Construction	Section 10
LP13	Bushfire Risk	The flood and emergency response plan (mitigation measure HS-4) would include measures to minimise the potential for bushfire risks.	Prior to Construction	Bushfire Emergency Management Plan

3 Introduction

3.1 Context

This FEMP forms part of the Construction Environmental Management Plan (CEMP) for the Illabo to Stockinbingal (I2S) Project. The CEMP details the key mitigation measures that will be implemented during construction by John Holland (JHG) in order to minimise and manage any flood impacts during the construction phase.

This Plan has been prepared to address the requirements of the Minister's CoA, the measures listed in the Environmental Assessment Documentation, and all applicable legislation.

3.2 Background

3.2.1 The Project

Inland Rail is an approximate 1,600 kilometres (km) freight rail network that will connect Melbourne and Brisbane via regional Victoria, New South Wales (NSW) and Queensland. Comprising 12 sections, a staged approach is being undertaken to deliver Inland Rail.

The Australian Rail Track Corporation (ARTC), with Inland Rail Pty Ltd (IRPL) as its subsidiary for the Inland Rail project, received infrastructure approval for the Illabo to Stockinbingal (I2S) section of Inland Rail in September 2024. The approval for I2S (the Project) was granted by the Minister for Planning and Public Spaces under section 5.19 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project is located in south-western NSW in the Riverina region (refer to Figure 3-1). Illabo is a small town located at the southern end of the alignment 16 kilometres (km) north-east of Junee in the Junee Local Government Area (LGA). Stockinbingal is situated at the northern end of the Project, approximately 20 km north-west of Cootamundra in the Cootamundra–Gundagai Regional LGA. The major towns surrounding the Project are Wagga Wagga, about 50 km to the south, Young to the north-east and Cootamundra to the east.

The Project comprises a new rail corridor that would connect Illabo to Stockinbingal. The alignment branches out from the existing rail line north-east of Illabo and travels north to join the Stockinbingal–Parkes Line west of Stockinbingal. The route will travel primarily through undeveloped land predominantly used for agriculture. The Project includes modifications to the tie-in points at Illabo and Stockinbingal to allow for trains to safely enter and exit the Illabo to Stockinbingal section of Inland Rail. The alignment also crosses several local and private roads, watercourses and privately owned properties. Additionally, no major towns are located within the Project site between Illabo and Stockinbingal.

The Project will include a total extent of approximately 42.5 km, including 39 km of new, greenfield railway which will incorporate the following key features:

- Connection to other rail lines, including Stockinbingal to Parkes line, Lake Cargelligo line, and Main Southern Railway
- One crossing loop and maintenance siding
- Level crossings and stock crossings
- Bridges over rivers and other watercourses, floodplains, and roads
- Upgrades of around 3.5 km of existing track for the tie-in works to the existing Main South Line at Illabo
- New track to maintain Lake Cargelligo line connection either side of the Project
- Realignment and road-over rail bridge for a section of the Burley Griffin Way at Stockinbingal
- Realignment of Ironbong Road to allow for safe sight lines at the new active level crossing

- Ancillary infrastructure to support the Project, inclusive of signalling and communications, drainage, drainage control areas, signage and fencing, and services and utilities
- Construction infrastructure, including ancillary facilities, and a temporary workforce accommodation facility.

The Project will also include upgrades to approximately 3 km of existing track associated with tie-in works and construction of an additional 1.7 km of new track to maintain the existing rail network connections. Road upgrade works will also be undertaken to re-align approximately 1.4 km of Burley Griffin Way to provide a road-over-rail bridge at Stockinbingal. Re-alignment of Ironbong Road will also be completed to allow for safe sight lines. A temporary workforce accommodation camp will also be constructed to house the workforce for the duration of the Project. Key features of the Project are shown on Figure 3-2.

A detailed Project description is provided in Section 2 of the CEMP.

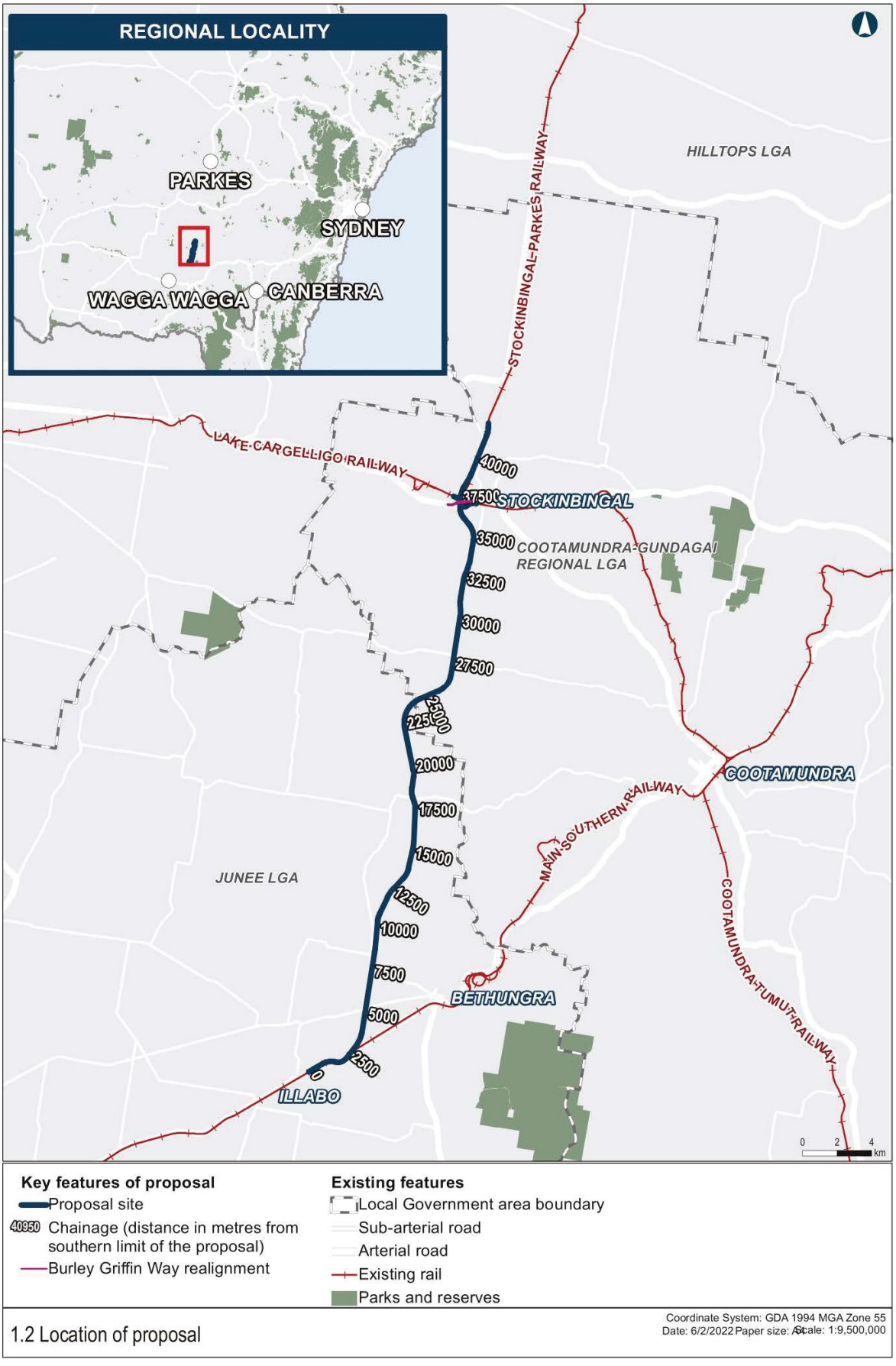


Figure 3-1 Project Locality (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

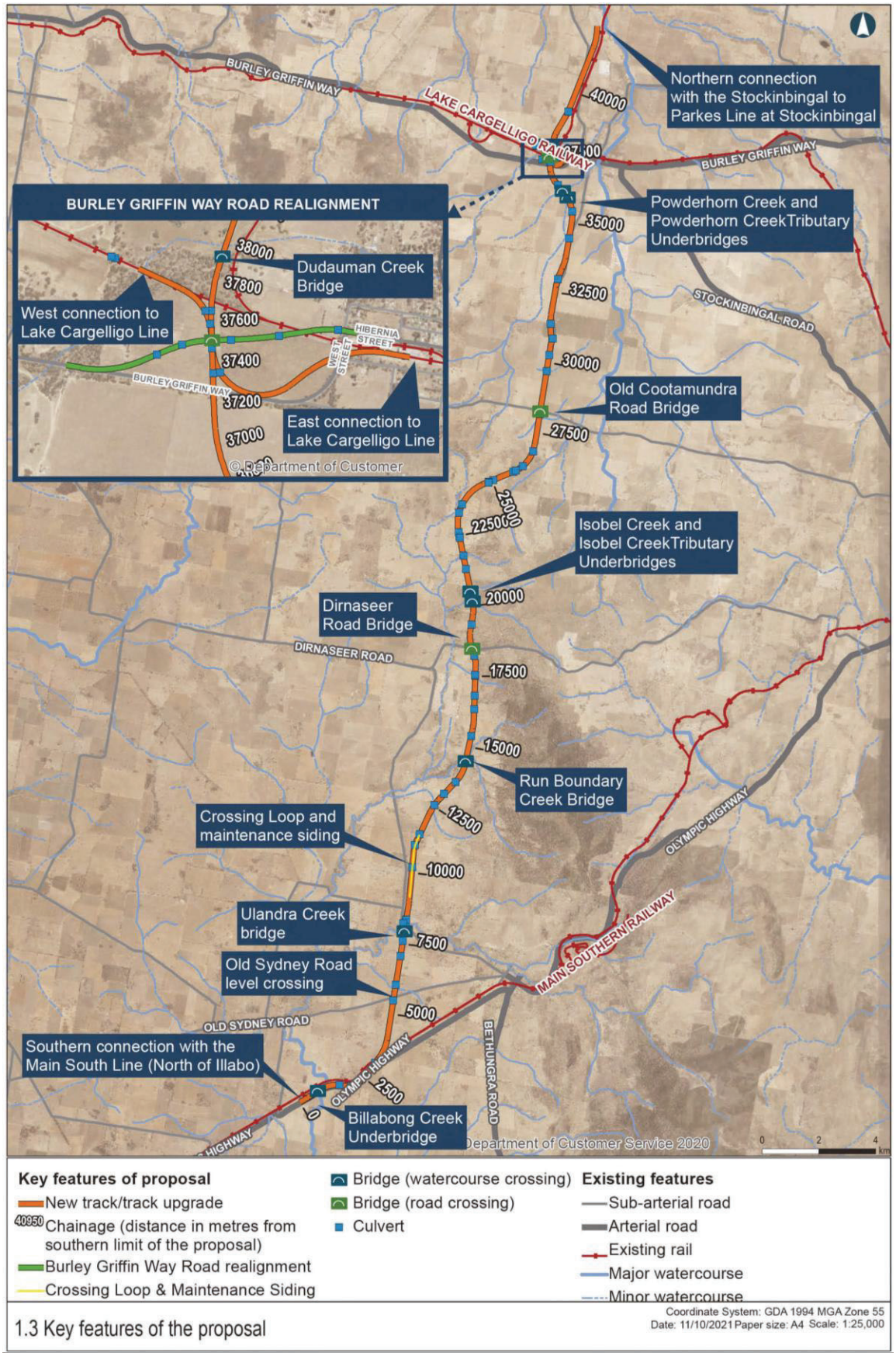


Figure 3-2 Key Project Features (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

3.2.2 Statutory Context

The Project was declared to be Critical State Significant Infrastructure (CSSI) in 2021, requiring approval under Division 5.2 of the EP&A Act. In accordance with the Secretary's Environmental Assessment Requirements (SEARs) (30 April 2021), an EIS was prepared by ARTC August 2022. The EIS was exhibited by the then Department of Planning and Environment (now Department of Planning, Housing and Infrastructure (DPHI)) for a period of six weeks, commencing on 14 September 2022 and concluding on 26 October 2022 Following public exhibition of the EIS, ARTC prepared a Submissions Report to respond to submissions and describe Project design refinements.

Approval for the Project was granted on 4 September 2024 by the Minister for Planning (application number SSI-9406) and was subject to a number of CoA.

The Project was determined to be a controlled action under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC Referral 2018/8233). The Project received controlled action approval from Department of Climate Change, Energy, the Environment and Water (DCCEEW) (EPBC Referral 2018/8233) on 28 October 2024

3.3 Scope

This FEMP addresses the relevant requirements of the Project Approval and all applicable guidelines and standards specific to emergency management during flooding. It has been developed based on the findings of the Environmental Impact Statement (EIS) which provided an assessment of the likelihood of floods and associated impacts during construction.

The FEMP is consistent with the IRPL Environment and Sustainability Policy and JHG's Environment Policy (refer Appendix A4 of the Project CEMP).

The key objective of this FEMP is to ensure that all CoAs, RMMs and licence / permit requirements relevant to flooding are adhered to, thus protecting environmental values. Supporting objectives and targets to achieve this are outlined below.

This FEMP is the key document for managing and minimising risk associated with flooding during the construction phase of the Project.

3.4 Objectives and targets

The following flood emergency management objectives will apply to construction (as defined in Section 1.1):

- To manage site works and prepare and respond to flood events to reduce the risk to human life, property and the environment;
- To reduce the financial and program impact on the Project as a result of flood events;
- To reduce the severity of flood events as a result of construction works;
- Minimise the impact of severe weather on the works under construction on the I2S Project;
- Reduce the risk profile of the Project as a result of sound preparedness for flood events; and
- Ensure a consistent approach to preparing for flood events.
- Minimise flood impacts on the township of Stockinbingal during construction.

The following flood emergency management targets will apply to construction:

- Ensure sites are suitably prepared prior to a flood event to ensure the Project's activities or physical works do not exacerbate the flood impact to human life, property or the environment;
- Ensure that effective flood risk identification and evaluation occurs that might impact the site;
- Proactively mitigate or minimise the impact of flood-related damage to the Project during construction;

- Proactively mitigate or minimise potential flood impacts to the downstream Stockinbingal Township.
- Be properly prepared for, effectively respond to, and recover from all flood events;
- Ensure that flood-related damage risk to plant, equipment and other temporary facilities is eliminated or minimised;
- Apply the appropriate rectification methods to damaged construction works and infrastructure after an event; and
- Ensure that all parties who should be notified of an impending event, or of the actual consequences of an event, are notified.

The implementation of the recommended mitigation measures will ensure the performance targets are achieved. This will be managed through Project inductions, specialised training, toolbox talks, inspections, and environmental monitoring and auditing. Project inductions will inform JHG personnel (including subcontractors) of the management measures, while toolbox talks and specialised training will ensure they are reinforced throughout the construction program.

The SEARs identified a number of desired environmental performance outcomes (EPOs) for the I2S Project. Based on the outcomes of the EIS EPOs have been established for the Project. EPOs relevant to flooding and where they have been addressed in this FEMP can also be found in Table 3-1.

Table 3-1 Environmental Performance Outcomes

Requirement Reference	I2S Specific Environmental Performance Outcomes	Where addressed
2.4.4. Flooding during construction	• Construction is undertaken in a manner that minimises the potential for adverse flooding impacts as far as practicable, through staging of works and the implementation of mitigation measures • Structures are designed and located such that flows are not significantly impeded • The proposal reduces the length of overtopping of the existing rail corridor • The proposal reduces or does not significantly increase the area subject to flooding.	This Plan

3.5 Environmental Management System Overview

The Project Environmental Management System (EMS) is based on the ISO 14001 accredited JHG EMS, which itself forms part of the overall JHG Integrated Management System (IMS), tailored to satisfy Project-specific requirements. It provides a framework to ensure an integrated approach to meeting Project requirements and defines how the Project will minimise impacts to the environment. It comprises a combination of governance documentation, Project-specific management plans (including this FEMP), procedures and tools.

The basis for the EMS is the concept of Plan-Do-Check-Act (PDCA), as shown in Figure 3-3.

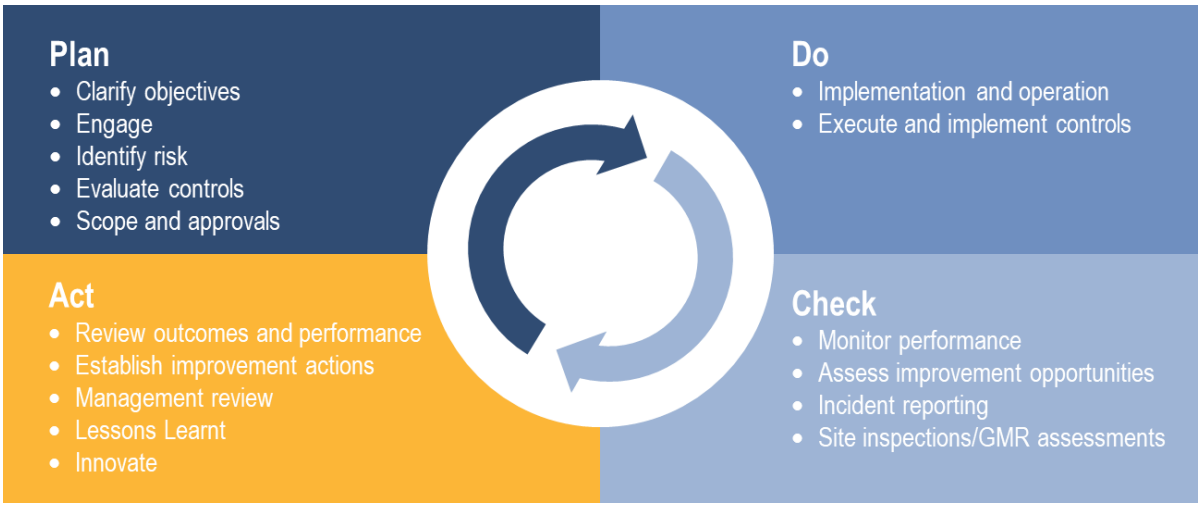


Figure 3-3 PDCA model

The PDCA model provides an iterative process to achieve continual improvement. As applied to the Project environmental processes, it can be briefly described as follows

- **Plan**: Establish environmental objectives and processes necessary to deliver results in accordance with the JHG environmental policy.
- **Do**: Implement the environmental processes as planned.
- **Check**: Monitor and measure processes against the environmental policy, including its commitments, environmental objectives, and operating criteria, and report the results.
- **Act**: to continually improve the environmental processes.

The framework introduced in ISO14001 is integrated into a PDCA model within the EMS and in turn the Project CEMP and this FEMP.

In accordance with the JHG Environmental Policy (refer to Appendix A5 of the CEMP), the Project will:

- Continually improve the EMS to enhance performance, through management review and CEMP and FEMP revisions
- Maintain third party certification of the overarching EMS to ISO 14001 with independent verification of implementation and effectiveness.

The EMS provides structure to environmental management of the Project and covers areas such as training, record management, inspections, objectives, and policies. This FEMP has been prepared as part of the EMS using JHG documentation as the basis for some documents (Figure 3-4).

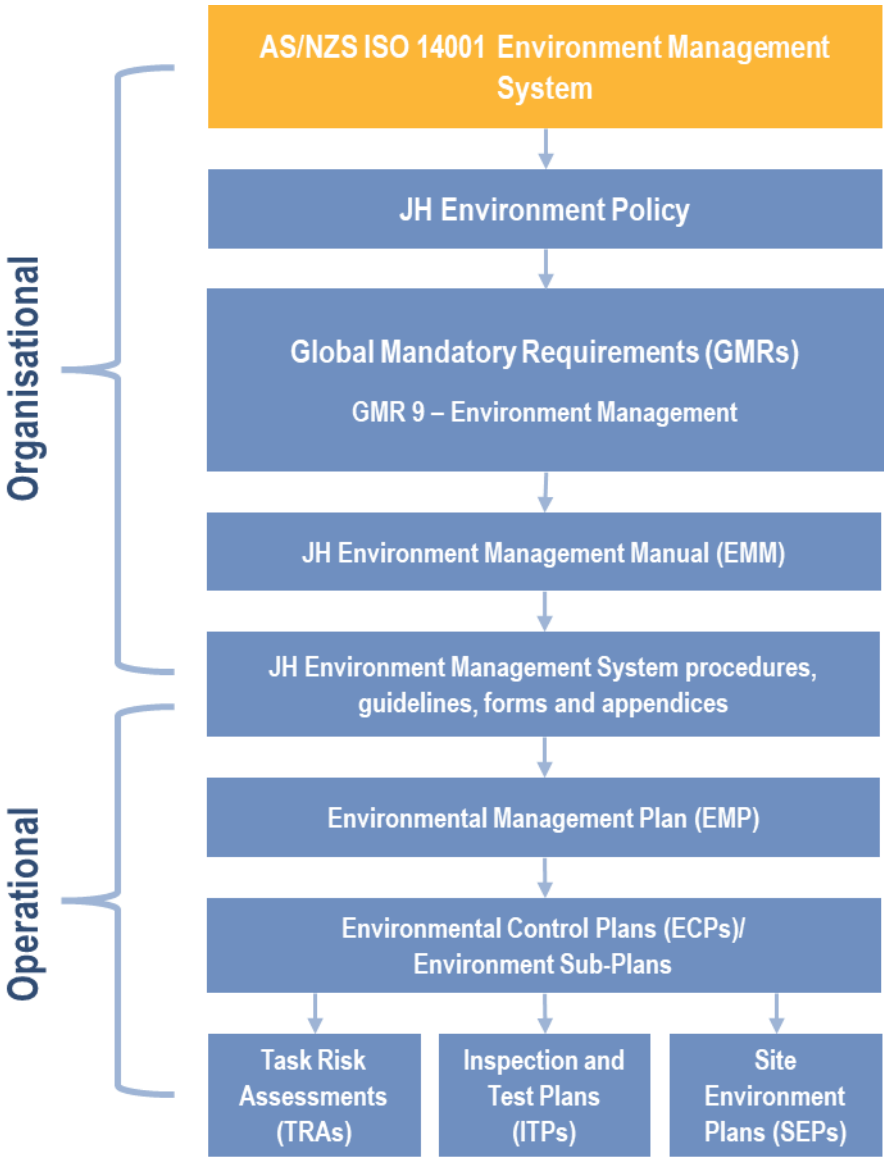


Figure 3-4 EMS Structure

The EMS contains policies, standards, manuals, plans, procedures, processes, and other documents that enable the Project to achieve its objectives through planned and controlled processes.

3.5.1 Global Mandatory Requirements

JHG's Global Mandatory Requirements (GMRs) outline the control strategies and minimum standards for managing, and where possible, eliminating key risks across the Project. GMRs which are relevant to the FEMP and will be implemented include GMR 9 – Environmental Management. This GMR has been developed to:

- Minimise the impact of our activities on the environment and communities.
- Be a reliable and trustworthy partner to our customers, dedicated to providing environmentally sustainable solutions throughout our diverse business.

The GMR's form part of the Project EMS and are to be used as tools in development of planning documents for management of environmental risks / impacts. Requirements of the GMR are integrated into this FEMP.

3.6 Plan preparation, endorsement and approval

This FEMP has been prepared by a suitably qualified hydrology and drainage personnel from JHG. In accordance with CoA C15 and A26, this FEMP will be endorsed by the Environmental Representative (ER). In accordance with CoA C14, the FEMP will then be submitted to the Planning Secretary for approval. The submission of this Plan to the Planning Secretary will be no later than one month before the commencement of construction[1]. In accordance with CoA C15, construction will not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. Any minor amendments to the FEMP will require approval from the ER in accordance with CoA A26(i).

[1]For the purposes of this FEMP, construction is defined as:

All works performed by JHG (incl. sub-contractors) that's required to construct the CSSI as described in the documents listed in CoA A1, including commissioning trials of equipment and temporary use of any part of the SSI, but excluding the low impact works listed in Table 1: Terms and Definitions of the CoA which is carried out or completed prior to approval of the CEMP.

4 Community and Stakeholder Engagement

In accordance with CoA C17 of the Infrastructure Approval (SSI-9406), JHG is required to consult the with the following agencies in relation to this FEMP.

- New South Wales State Emergency Services (NSW SES), specifically Murrumbidgee SES;
- Regional Delivery (RD) within the Conservation Programs, Heritage & Regulation Group of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW).
- Junee Shire Council; and
- Cootamundra-Gundagai Regional Council

In accordance with CoA A10, a Consultation Summary Report which summarises the consultation with the above agencies has been prepared and provided in Appendix D. It is noted that in the event of comments being received following the making of this Plan by agencies who have been requested under C17 to be consulted, comments will be considered from these agencies and incorporated where relevant.

Community management and complaints handling in accordance with the Community Communication Strategy (CCS) are provided in Section 11.5.

In addition to the consultation elements described above, key stakeholders that will be contacted and communicated with during a flood emergency or event include:

- Junee Shire Council- 02 6924 8100
- Cootamundra Gundagai Regional Council- 1300 459 689
- State Emergency Service- 132 500.

5 Legal and Compliance Requirements

This section details the relevant legal and compliance requirements for the I2S Project including the CoAs, and the SEARs EPOs and where they are addressed within this FEMP.

5.1 Legislation

Legislation considered during the development of the FEMP includes:

- *State Emergency and Rescue Management Act* (1989)
- *Protection of the Environment Operations Act* (1997)
- *Environmental Planning and Assessment Act* (1979)
- *Water Management Act* (2000)
- *Water Act* (1912)
- *Water Act 2007* (Commonwealth)
- *Water Amendment Act 2008* (Commonwealth)

5.2 Guidelines

Guidelines and standards relating to flood emergency management associated with construction of the Project include:

- *Cootamundra Floodplain Risk Management Study and Plan,* Cootamundra-Gundagai Regional Council, June 2023
- *Junee Local Flood Emergency Sub Plan – Junee Shire Flood Emergency Sub Plan,* March 2024, NSW State Emergency Service 2024
- *Cootamundra Local Flood Plan* (NSW SES, 2007)
- *Stockinbingal Flood Study Report,* Cootamundra-Gundagai Regional Council, March 2024
- *Flood Risk Management Manual: The policy and manual for the management of flood liable land*, Department of Planning & Environment (DP&E) 2023
- Support for Emergency Management Planning" guideline (EM01), Department of Planning & Environment (DP&E) 2023, that supports the Flood Risk Management Manual.
- *Australian Disaster Resilience Handbook 7: Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia*, Australian Institute for Disaster Resilience (AIDR), on behalf of the Australian Government Attorney-General's Department 2017
- *Floodplain Development Manual: The Management of Flood Liable Land* (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2005
- *Junee Local Environmental Plan 2012*
- *Cootamundra Local Environmental Plan 2013*
- *Shelter in place guideline for flash flooding*, Department of Planning, Housing and Infrastructure, January 2025

5.3 Regional Flood Management Context

The EIS Section 12.3.4.2 states: the rural nature of the Project site, scarcity of urban development and lack of regional flood-liable land means there are no formal flood emergency management arrangements in place for most of the land in and around the Project site. The Cootamundra–Gundagai Shire Council area is in the Murrumbidgee SES region and for emergency management purposes is part of the Southern Highlands Emergency Management District. The Local Flood Plan (LFP) from the

previous Cootamundra Shire Council, the Cootamundra LFP (NSW SES, 2007), and its updated version (November 2023), governs flood emergency management arrangements for the urban areas of Stockinbingal.

The NSW SES State Controller (or delegate) will appoint Incident Controllers and establish Incident Control Centres. The NSW SES Incident Controller, in consultation with participating supporting emergency services and functional areas will determine the appropriate breakdown of an Area of Operations into Divisions and/or Sectors. The delegated Cootamundra controller is then responsible for dealing with local floods. The LFP outlines that emergency services such as the Rural Fire Service (RFS) is to provide personnel in rural areas and villages to inform the delegated Cootamundra SES local controller about gauge heights, flood conditions and response needs in their own communities and to disseminate flood information.

5.4 Environmental Protection Licence

The Project will be required to apply and maintain an Environmental Protection Licence (EPL) as a Scheduled Activity for 'railway activities - rail infrastructure construction' under the *Protection of the Environment Operations* Act 1997.. Once the Project has obtained an EPL, this section will be updated if there are any flood emergency management related conditions.

6 Existing Environment and Flood Characteristics

6.1 Existing Environment

A summary of the key findings from the EIS in relation to flood impacts on construction are outlined below. Further detail can be found in the I2S EIS and associated Technical Paper 4 (Hydrology and Flooding Assessment).

Flood events in the area are generally influenced by two sources:

- Regional flood events associated with the Murrumbidgee River or Lachlan River catchments; and
- Local flooding associated with local catchments draining to an individual underbridge or group of culverts in isolation of the regional flooding behaviour.

During flood events, modelling shows that the designed rail line will not be overtopped by 1% Annual Exceedance Probability (AEP) design event.

Key watercourses and existing flood behaviour for the 1%AEP are summarised in Table 6-1. For additional information, Appendix A provides EIS 1% AEP and Probably Maximum Flood (PMF) depth and duration from Revised EIS Appendix C.

Table 6-1 Key watercourse and existing flood behaviour for the 1%AEP (Source: Illabo to Stockinbingal - Environmental Impact Statement, 2022)

Catchment and watercourse	Flood levels and distribution	Velocity	Critical Storm Duration
Murrumbidgee Catchment			
Billabong Creek	Billabong Creek has a catchment of about 320 km2 and includes the tributaries of Ironbong Creek and Ulandra Creek. For the 1% AEP event, the hydraulic modelling indicates that the existing rail embankments act as a barrier to flows travelling south. The floodplain upstream of this control point is up to 1.7 km wide, with depths ranging up to 1.1 m during the 1% AEP.	Up to 1.5 m/s within the channel and floodplain flows of less than 0.5 m/s.	Up to 24 hours, 12 hours for the 1% AEP
Ulandra Creek	Flooding is generally confined to the channel for flood events up to the 1% AEP. At Ironbong Road the floodplain extends to 1 km in width for the 1% AEP, and depths of up to 3 m in the main channel. Ironbong Road acts as a barrier to surface water flows from east to west. Historical evidence suggests that floodwaters do break the banks and inundate land either sides of the main channel.	Up to 2 m/s within the channel and floodplain flows of less than 0.5 m/s.	12 hours for the 1% AEP
Unnamed tributaries between Ulandra and Run Boundary Creek	Flooding is directed by overland flow paths to a number of farm dams. Depths between the farm dams are estimated to be less than 0.1 m for the 1% AEP.	Less than 0.5 m/s except immediately downstream of some farm dams.	Up to 24 hours for the 1% AEP
Run Boundary Creek	Flood modelling for Run Boundary Creek indicates that flows are predominantly confined to the channel for the 1% AEP. The width of the floodplain for Run Boundary Creek ranges from 170 m to 350 m at the confluence of Ironbong Creek.	Up to 4 m/s within the channel and floodplain flows of less than 1 m/s.	Up to 24 hours for the 1% AEP

Catchment and watercourse	Flood levels and distribution	Velocity	Critical Storm Duration
	Water depths are up to 1.5 m within the channel and 0.7 m across the floodplain.		
Isobel Creek	A flood extent of Isobel Creek of generally less than 30 m was modelled during the 1% AEP, with depths up to 1.5 m within the channel.	Up to 4 m/s within the channel and floodplain flows lowering to 0.3 m/s.	Up to 18 hours for the 1% AEP
Lachlan Catchment			
Unnamed tributaries between Isobel and Powder Horn Creeks	The 1% AEP indicates that there is limited channel definition, with limited capacity, and a majority of the 1% AEP flood flow spreading across flat grazing and cropping land. Flood depths are 0.1 m across the majority of the extent, with depths of up to 0.5 m downstream of a farm dam.	Average of less than 0.2 m/s, with some sections peaking at 0.5 m/s.	Up to 24 hours for the 1% AEP
Powder Horn Creek	A flood extent of up to 500 m is produced during the 1% AEP, with flood depths ranging from 2 m within the channel, and 0.1 m to 0.5 m at the edge of the floodplain. Flood modelling for Powder Horn Creek indicates it is not impacted by flooding from Bland Creek within the Project.	Up to 1.5 m/s within the channel and floodplain flows of 0.8 m/s.	Up to 18 hours for the 1% AEP
Dudauman Creek	Dudauman Creek has a relatively small channel, and modelling indicates that Burley Griffin Way and the Lake Cargelligo Line act as barriers for surface water flows and result in ponding upstream. Flood modelling indicates that flooding during 1% AEP events south of the Burley Griffin Way extends to about 500 m. Flooding extents of up to 750 m occur between the Burley Griffin Way and the Lake Cargelligo Line, which act as upstream and downstream constraints. This flooding results in water depths of up to 2 m within the channel and 0.5 m across the floodplain. Flood extents downstream of the Stockinbingal to Parkes Line is about 200 m and extends out to 500 m immediately upstream of Stockinbingal.	Up to 1.8 m/s within the channel and floodplain flows of less than 1 m/s.	Up to 18 hours through the channels between Burley Griffin Way and the Lake Cargelligo Rail Line, and up to 24 hours downstream of the Stockinbingal to Parkes rail line for the 1% AEP.

6.2 Regional Flood Characteristics

A summary of the flood characteristics for key waterway crossings contained within the EIS Technical Report 6 (Hydrology and Flooding Assessment) and the Submissions and Preferred Infrastructure Report - Flood Study Report are presented below in Table 6-2.

Whilst the waterway crossings within the I2S works have relatively small catchments (i.e. < 500 km^2) they are associated with rather shallow and widespread flooding due to the flat terrain of the region. All waterway crossings are categorised by a 'High Flood Hazard' category meaning that it is unsafe for people and vehicles to enter the waters during a flood.

Table 6-2 Flood Characteristics at key waterway crossings

Chainage	Waterway	Catchment Area	Flood Warning Time (Est.)[1]	1% AEP In-channel Flood Depth (m)	1% AEP Velocity (m/s)	Basin Name
730	Billabong Creek	320 km^2	9 hours	1.1	1.5	Murrumbidgee River Basin

Chainage	Waterway	Catchment Area	Flood Warning Time (Est.)[1]	1% AEP In-channel Flood Depth (m)	1% AEP Velocity (m/s)	Basin Name
7940	Ulandra Creek	71 km^2	5 hours	3.0	2.0	Murrumbidgee River Basin
14480	Run Boundary Creek	18 km^2	4 hours	1.5	4.0	Murrumbidgee River Basin
20130	Isobel Creek	8 km^2	5 hours	1.5	4.0	Murrumbidgee River Basin
36200	Powderhorn Creek	25 km^2	5 hours	2.0	1.5	Lachlan River Basin
37950	Dudauman Creek	27 km^2	4 hours	2.0	1.8	Lachlan River Basin
Note 1: 1% AEP Flood Warning (time to peak) was extracted from hydrologic model						
Note 2: 1% AEP Flood velocities obtained from EIS Section 12.3.4. These velocities will be included and considered in the Site-Specific Flood Preparation Plan (Appendix C) for that waterway. These velocities and associated scour potential will be considered during flood preparation works and mitigation measure developed with the Certified Professional is Erosion and Sediment Control to manage the risk as reasonably practicable.						

6.3 Historic Flood Events

6.3.1 1974 Flood at Stockinbingal Village

The Stockinbingal village is located on the combined floodplain of the Bland and Dudauman Creeks. The Project does not cross Bland Creek but intersects many tributaries of Bland Creek including Powder Horn Creek. The Stockinbingal Floodplain Management Plan indicates that there is a series of artificial levees along Dudauman Creek between Burley Griffin Way and the Lake Cargelligo Line. The levees are estimated to provide flood immunity to the town in events up to the 10% AEP.

The Stockinbingal Floodplain Risk Management Plan also indicates that the two most significant floods that have occurred at Stockinbingal occurred in 1956 and 1974. Inundation in Stockinbingal during the 1974 flood event occurred when Dudauman Creek broke its banks in the vicinity of the West Street and Wood Street intersection, and at the Geraldra Street crossing. Figure 6-1 shows the rail crossing at the Bland Creek Railway Bridge during the 1974 flood at Stockinbingal.



Figure 6-1 Photo of 1974 Flood at Stockinbingal (Bland Creek Railway Bridge)

6.3.2 2011 Event near Illabo

A severe rainfall event also occurred in February 2011 where more than 140 mm of rain was recorded within a 12-hour period at Muttama. The severe rain event resulted in flooding within the Jeralgambeth Creek catchment near the township of Illabo.

7 Environmental Aspects and Impacts

7.1 Construction Activities

Key aspects of the Project that could result in adverse impacts to flood emergency management will typically include any work which has the potential to obstruct or divert the passage of floodwater and overland flow, which could exacerbate existing flooding conditions and pose a safety risk to personnel. Some of these activities include:

- Storing of plant, equipment and materials within a flood prone area.
- Placement of stockpiles in flood prone areas or where it may potentially obstruct or divert floodwaters.
- Works conducted within or directly adjacent to waterways.
- Works which reduce the ability of dams to retain water.
- Placement of compounds, ancillary facilities, site offices, amenities, chemical storage areas, temporary workforce accommodation facility etc. within flood prone areas.
- Temporary drainage or erosion and sediment (ERSED) controls which may obstruct or divert floodwaters.

7.2 Flood Impact on Construction

Typical direct and indirect impacts to flood emergency management

In addition to the above, Section 6 of JHGs CEMP contains a Project level environmental risk assessment which includes an assessment of flood risks during construction which is provided in Appendix E. In addition to this risk assessment, Table 26.3 of the I2S EIS also summarises potential residual impacts for the Project with a description of how they would be managed. The impact of construction on flood behaviour is expected to be negligible compared to regional flood levels and behaviour (I2S EIS Technical Paper 4 (Hydrology and Flooding Assessment)). Mitigation measures from the risk assessment have been included in Section 10.

7.3 Flood Impact on Operation

This FEMP does not assess operational flood impacts. Operational flood impacts will be managed in accordance with the Flood Emergency Response Plan in accordance with CoA E73. Further information on flood impact management in operations and the design process is provided in Section 10.1.

8 Flood Warning

This section describes the Projects flood warning strategy to identify potential flood events. It includes:

- Existing streamflow monitoring stations
- Existing rainfall monitoring stations
- Forecast rainfall depths and flood trigger values
- Flood warning strategy and implementation.

8.1 Existing Streamflow Monitoring Stations

There is one streamflow gauging station which is located upstream of the Project construction area that may be used to monitor flood levels and anticipate flood warning signals, this is 573013 Wattle Creek in the Dudauman Creek catchment. The station is owned by WaterNSW and has been recording water level data since January 1988.

The 573013 station is included in the Bureau of Meteorology (BoM) Flood Warning product and therefore is used for flood warning purposes within the Lachlan River Basin.

JHG will utilise the data recorded to inform flood warning trigger levels across the region. Details of the available gauging station is summarised below. Table 8-1 and a photo provided in Figure 8-1.

Real-time water level recordings are available online from the following websites:

- BoM Website: http://www.bom.gov.au/fwo/IDN60236/IDN60236.573013.plt.shtml
- WaterNSW Website: https://realtimedata.waternsw.com.au/water.stm

Table 8-1 Key Monitoring Station

Gauge No.	Gauge Name	Gauge Location	Upstream Catchment Area	Data Owner	Gauge Zero Level (m AHD)
573013 (*) 412134 (**)	Wattle Creek at Dudauman (Wattle Creek in the Dudauman Creek catchment)	Lat: -34.60 Long: 147.87	7 km^2	Water NSW (*) BoM (**)	RL. 337.205



Figure 8-1 Photo of Water Level Gauging Station (Wattle Creek at Dudauman)

8.2 Existing Rainfall Monitoring Stations

There two open rainfall gauging station located across the alignment, both of which sit within the Lachlan River Basin as shown in Table 8-2 and Figure 8-2. These rainfall gauging stations are listed within the BoM Flood Warning Product.

The latest rainfall observations can be accessed from the following websites:

- BoM Website: http://www.bom.gov.au/nsw/flood/centralwest.shtml
- WaterNSW Website: https://realtimedata.waternsw.com.au/water.stm

Both gauges and in particular the Sunnydale rainfall gauging station will form part the I2S Flood Warning Strategy (Section 8.5). 7-Day rainfall forecasts and significant weather events are mapped by the BoM MetEye Product which can be accessed here: MetEye

Table 8-2 Key Rainfall Monitoring Stations

Gauge No.	Gauge Name	Gauge Location	Drainage Basin	Station Owner
573013 412134	Wattle Creek at Dudauman	Lat: -34.60 S Long: 147.87 E	Lachlan	WaterNSW
073150	Stockinbingal (Sunnydale)	Lat: -34.53° S Lon: 147.84° E	Murrumbidgee	BoM

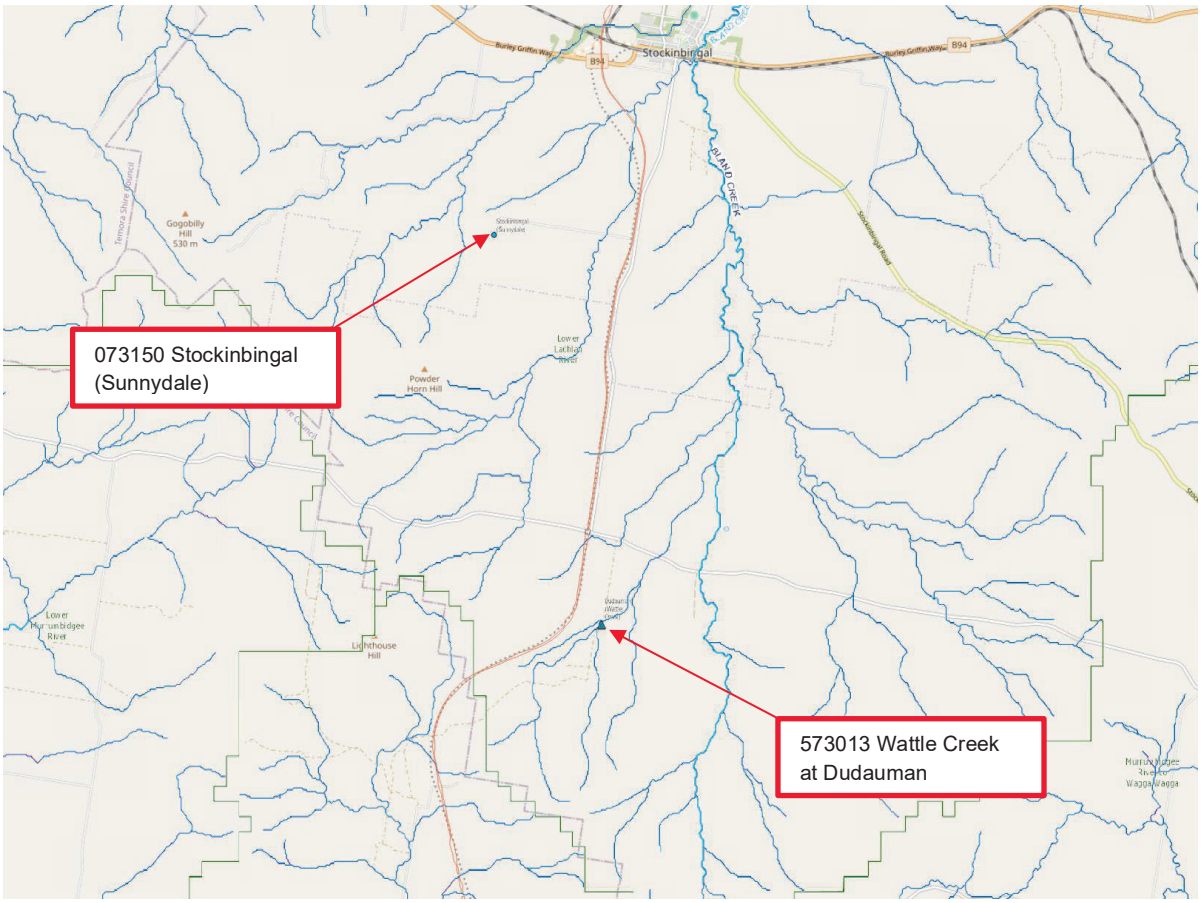


Figure 8-2 Location of Rainfall and Water Level Gauging Stations

8.3 Forecast Rainfall Depths and Trigger Levels

The rainfall Intensity Frequency and Duration (IFD) patterns between Illabo and Stockinbingal are effectively the same across the alignment (WSP, 2022). This means that flood warning signals may be represented by a single rainfall depth range (or trigger level) as forecast by one or more regional rainfall gauges within the region. Forecast rainfall depths and trigger levels will form the basis of the Flood Warning Strategy presented in Section 8.5.

Bench-mark rainfall depths for the region have been extracted from the BoM website with reference to the approximate midpoint of the alignment at (Lat -34.538, Long 147.862). The rainfall depths associated with critical storm durations (i.e. the storm duration that produces the worst-case flooding) are summarised in Table 8-3 below. This indicates that forecast rainfall totals of **+36.8 mm or more within a 3-hour period** is expected to generate flooding within local waterway crossings. A summary of forecast rainfall trigger levels, and associated actions based on storm duration and predicted rainfall depth is included in Table 8-4.

Table 8-3 Design Rainfall Depths

Storm Duration (hours)	Rainfall Depth (mm)				
	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
3-Hour	36.8	43.8	50.8	60.4	68.0
4.5-Hour	41.7	49.6	57.5	68.2	76.6
6-Hour	45.7	54.3	62.8	74.4	83.5

9-Hour	51.9	61.5	71.1	84.1	94.3
12-Hour	56.8	67.2	77.5	91.7	103.0
18-Hour	64.1	75.7	87.3	103.0	115.0
24-Hour	69.5	82.0	94.6	112.0	125.0

Table 8-4 Forecast Rainfall Trigger Summary

Trigger Category	Threshold / Rainfall Depth (mm)	Storm Duration / IFD	Subsequent Action	Responsibility
Forecast rainfall	25	30-minutes	• Continue to monitor meteorological forecast and BOM flood warnings (Section 8.4.1). • Continue to implement Items 1 to 4 of the flood warning strategy (Section 8.5). • Enact the Project Specific Construction Flood Emergency Response Plan (Section 9) based on forecast rainfall triggers. • Implement actions based on nominated preparation or response stage (Table 9-1). Pre-flood and during-flood actions will be determined based on direction of emergency services and the Project Director. • Site evacuation will be determined by NSW SES as required. • Implement flood emergency mitigation and management measures (Section 10) where applicable and safe to do so.	Senior Project Engineer (SPE) Construction Manager (CM) General Superintendent (GS) Discipline Superintendent (Rail, Earthworks, etc) (DS) Safety Manager (SM) Environment and Sustainability Manager (ESM) Project Director (PD) NSW SES and designated local Controllers Community and Stakeholder Engagement Manager (CSEM) ALL – All Project personnel
	+36.8	3-hour		
	50	6-hour		
	+69.5	24-hour		

The BoM Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.15 Schedule 2 (BoM, 2024) includes Stockinbingal as a flood forecasting location for the Lachlan Drainage Basin.

The Service Level Specification indicates that the *'flood warning signal'* for the Lachlan region at Stockinbingal would be issued if more than **50 mm of rainfall is forecast within a 6-hour period** and the target warning lead time for flood warning signals is 1-hour.

The Service Level Specification also indicates that a *'rainfall alert'* would be issued for the Lachlan region at Stockinbingal if more than **25 mm of rain is recorded within 30 minutes** at Stockinbingal (Sunnydale).

Rainfall bulletins for the South-West Region are updated 3-hourly. The BoM Service Level Specification can be accessed here:

BoM Website: http://www.bom.gov.au/nsw/NSW_SLS_Current.pdf

8.4 Flood Warning Time

Flood warning times are evaluated as the lag time between a peak rainfall intensity and a peak flood level occurrence for gauged catchments. Flood warning times for local waterways traversing the alignment are likely to be very short (i.e. hours, not days) as the upstream catchment areas are relatively small and the catchment response is fast.

The time it takes for flood water levels to peak within local waterways is estimated to be less than **6 hours** with the exception of Billabong Creek which is estimated to take **9 hours**. However, the BoM Flood Watches, Flood Warnings and Severe Weather Warnings are generally issued 2-4 days in advance which would allow precautionary action to be taken on site prior to a flood event. Therefore, the emphasis should be on implementing precautionary actions based on BoMs Warnings rather than responding during the actual events. BoM Flood Warning Signals for the site may be accessed from http://www.bom.gov.au/nsw/warnings/.

Flood warnings are issued when the BoM is more certain that flooding is expected, often when rainfall has started to fall. Flood Warnings are more targeted and are issued for specific catchments or even sub-catchments in some of the larger river basins. Flood warnings will generally include specific predictions of the severity of expected flooding.

There will be occasions when a flood warning is issued without it being preceded by a Flood Watch, largely due to the complexities of forecasting rainfall accurately. Weather models are excellent at identifying broader scale weather patterns but are not always able to represent the smaller scale features that can cause heavy rainfall. For this reason, there will be times when heavy rainfall leading to flooding occurs but forecast models were not able to accurately identify this beforehand.

8.4.1 Flood Watch

A BoM Flood Watch is issued when forecast rainfall information suggests that local and/or riverine flooding is possible across the Flood Watch area. A Flood Watch may cover a large area due to uncertainty associated with the location and amount of forecast rainfall. A flood watch may also make reference to the type of flooding that may be experienced in the catchment being highlighted. The types of flooding that may be referred to include:

Local flooding – For areas without a well-defined river, describes situations where intense rainfall is expected to cause high run-off volumes in small catchments or localised areas with minimal impact on main streams. The areas outlined in a Flood Watch may not be currently covered by a formal flood warning service.

Local and Riverine flooding - For areas with a well-defined river, describes situations where intense rainfall is expected to cause high run-off volumes in small catchments or localised areas with significant impact on the water levels in main rivers and streams.

The areas outlined in a Flood Watch may not be currently covered by a formal flood warning service. The I2S Flood Warning Strategy is discussed further in Section 8.5.

8.5 Flood Warning Strategy and Implementation

Weather conditions in the vicinity of the site will be monitored with sufficient warning time of impeding flood producing rain. Weather warnings will need to be disseminated to all construction personnel on site so they can implement precautionary measures and relocate any mobile equipment stored on site outside of the waterways wherever possible.

The following flood warning approach will be implemented:

1. WaterNSW is responsible for the collection and monitoring of flood data along waterways (including Wattle Creek) and provides the BoM and NSW SES real-time or near real-time river height data for the development of official flood warnings. Access to real-time water

level data for the respective gauging station.is available at *Real-time water data*. This website will be checked daily by the Environment and Sustainability Manager to monitor rainfall and streamflow at 57013 Wattle Creek at Dudauman Gauge which is a WaterNSW gauge.

https://realtimedata.waternsw.com.au/water.stm

2. Manly Hydraulics Laboratory (MHL) provide a freely downloadable app 'Floods Near Me' which provides access to water level data from a mobile phone. Users can set up 'push notifications' sent straight to their home screen for updates on timely water level information. The push notifications are provided within 30 minutes of the data being recorded at the gauge and may be set up to notify the user of any specified trigger levels. The Floods Near Me app is available at Floods Near Me NSW The Safety Manager, Environment and Sustainability Manager, Environment Coordinators, Construction Managers and Site Supervisors will have this app on their mobile phones.

   http://floodsnearme.manly.hydraulics.works/

3. The Murrumbidgee and Lachlan River Catchments are included in the BoM Flood Watch / Flood Warning product. This product is issued when flooding is expected in NSW. Lead time for this warning product is usually 2-4 days (or sometimes even longer), with less accuracy the further away from the predicted rainfall event. Early warning messages with flood predictions for the region are disseminated directly to the NSW SES, other State and Local Government Agencies and are published at: *National Warnings Summary*. This website will be checked daily by the safety Manager, Environment and Sustainability Manager, Environment Coordinators, Construction Managers and Site Supervisors for rainfall events predicted to be >10mm in a 24hour period.

   http://www.bom.gov.au/nsw/warnings/

4. Rainfall forecasts up to 6-days in advance are mapped by the BoM MetEye Product which can be accessed here: MetEye. This site provides 3-hourly and Daily forecast rainfall up to 6 days in advance. This website will be checked daily by the Environment and Sustainability Manager for rainfall events predicted to be >36.8 mm within a 3-hourly forecast or >69.5 mm within a Daily forecast. A summary of triggers and subsequent actions is provided in Table 8-4 The BOM also provide a rainfall radar for the Project area referred to as the 128 km Wagga Wagga Radar Loop. This site provides a very accurate image of the storm cloud that is occurring over the region at the point in time.

   http://www.bom.gov.au/australia/meteye/?loc=NSW_FA001

A flowchart has been developed to provide an overview of the warning systems in place that the Project team will follow in the event of a potential flood event. This flowchart breaks down the key actions and responsibilities described in this section above and is included in Appendix F of this Plan.

9 Construction Flood Emergency Response Plan

9.1 Project Specific Construction Flood Emergency Response Plan

A range of environmental requirements and management measures are identified in the CoA, RMMS and EPOs. Environmental controls will be implemented to avoid, minimise and manage flood impacts on construction and the community. Controls to address the construction impacts of the Project on flood risk are summarised in Section 10, together with details on resourcing, timing and responsibility.

This Flood Emergency Response Plan (FERP) has been prepared by an experienced flood emergency response specialist in accordance with the NSW Floodplain Development Manual (replaced by NSW Flood Risk Management Manual, 2023). NOTE: This FERP has been prepared for the construction phase of Project only – see Table 9-1. The Operational Flood Emergency Response Plan (CoA E73) is a separate document – refer to Section 10.1.

Table 9-1 Construction Flood Emergency Response Plan

Stage	Construction Phase Flood Emergency Response Plan	Responsibility
Preparation (Get Ready)	**Prepare Site-Specific Flood Preparation Plan** SPE - A Site-specific flood preparation plan (SSFP) will be developed for all active work sites. The SSFP are specific to the works occurring, the surrounding environmental constraints and the flood risk. The SSFP (template in Appendix B) will include any temporary works and flood preparation and response measures specific to those works. The SSFP will address the methods, timeframes, and responsibilities for securing, removal, mobilisation to higher ground or protection of materials safely for work areas during a flood event. The SSFP will be prepared prior to significant works occurring within that area. SPE - SSFP will include information on where to go (evacuation) in the event of a flood, who to call (NSW SES – 132 500) or emergency services (000), where to receive updates and advice (e.g. radio, social media) and trigger, warnings and natural signs of flooding. SPE - Each SSFP will include site specific information such as where plant and equipment (including site amenities and hazardous materials) and stockpiles should be located to minimise the impact of flooding and/or reduce timeframes for removal if required. Where plant and equipment cannot be removed, details of how it will be secured would be detailed in the SSFP DS – SSFP will be kept at the activity sites, with the other site-specific documentation. These plans will be regularly reviewed and revised progressively throughout construction as activities and locations change to ensure the preparedness for flood risk	Senior Project Engineer (SPE), with input from: Construction Manager (CM) General Superintendent (GS) Discipline Superintendent (Rail, Earthworks, etc) (DS)
Preparation (Get Ready)	**Training and Awareness** GS/DS – SSFP will be the subject of toolbox talks to the Construction Team to education about the FERP and as required as part of emergency drills.	General Superintendent (GS) Discipline Superintendent (Rail, Earthworks, etc) (DS)
Preparation (Get Ready)	**Weather Monitoring and Flood Warning Systems** ALL – The Project Team shall sign up to the BoM Flood Warning Product for the respective Flood Watch Area(s) GS / DS / SM /EM – Weather would be monitored daily for construction planning purposes to identify any risk of high rainfall and subsequent flooding events GS / DS / SM / EM - Weather would be monitored daily for construction planning purposes to identify any risk of high rainfall and subsequent flooding events	Senior Project Engineer (SPE) Construction Manager (CM) General Superintendent (GS) Discipline Superintendent

Stage	Construction Phase Flood Emergency Response Plan	Responsibility
	EM - Long-term climatic modelling will be regularly reviewed to identify any potential risk of flooding. CSEM - Via the IRPL Communications Team, the contact details of local upstream land holders will be obtained and contacted when works are occurring in the area and when flood and / or severe weather is predicted to determine what flood preparedness works need to be undertaken. ALL - Live Traffic NSW (Live Traffic NSW | Incident Details) website and physical road closures will inform suitable and available evacuation routes for Project personnel. ALL – In the event of self-evacuation or an evacuation order is issued by the authorities, personnel are to listen and adhere to the advice provided by the relevant authorities (i.e. NSW SES, OEM, LEMO, or Police) with regard to road closures and evacuation routes. Personnel's evacuation plans are to be discussed with the relevant Site Supervisor / Manager and / or member of the Project's Safety Team. A Journey Management Plan is to be completed for any journeys greater than 2hrs in length.	(Rail, Earthworks, etc) (DS) Safety Manager (SM) Environment and Sustainability Manager (ESM) Community and Stakeholder Engagement Manager (CSEM) ALL – All Project personnel
Preparation (Get Ready)	**Temporary Works Measures** GS / DS - Site specific temporary works such as minor drainage realignments and diversions, bunding and raising of site platforms may be required at ancillary facilities. CM / SPE / EM / GS / DS - Design and implementation of temporary works flood mitigation measures shall be determined on a site-by-site basis by the Temporary Works Team. GS / DS / SPE / EM – Assess all installed temporary works to determine the risk associated with these works and if the works require removal.	Senior Project Engineer (SPE)Construction Manager (CM) General Superintendent (GS) Discipline Superintendent (Rail, Earthworks, etc) (DS) Environment and Sustainability Manager (ESM)
Response (During Flood)	**Immediately Prior to a Flood Event** Immediately Prior to a Flood Event the following will be undertaken: GS / DS - Remove wastewater from site amenities by an authorised transporter for offsite disposal at a licensed facility; GS / DS - Remove all hazardous items and chemicals to be outside of the flood prone land; GS / DS - Mobile construction equipment (or excess material) will be removed from waterway or flood prone areas; and GS / DS - Power to any affected sites and equipment will be turned off and alternate power sources to be set-up at the construction site. GS / DS – All preparation measures detailed in the Site-Specific Flood Preparation Plan must be actioned and documented in the Site Preparation Checklist. ALL – In the event of self-evacuation and / or an evacuation order is issued by the authorities, personnel are to listen and adhere to the advice provided by the relevant authorities (i.e. NSW SES, OEM, LEMO, or Police) with regard to road closures and evacuation routes and LFP specific requirements (see Section 9.2). Personnel's evacuation plans are to be discussed with the relevant Site Supervisor / Manager and / or member of the Project's Safety Team. A Journey Management Plan is to be completed for any journeys greater than 2hrs in length.	Discipline Superintendent (Rail, Earthworks, etc) (DS) ALL – All Project personnel
Response (During Flood)	**Monitoring During Flooding**	Project Director (PD)

Stage	Construction Phase Flood Emergency Response Plan	Responsibility
	GS / EM - On-going monitoring of the BoM flood warning products will be undertaken for updated information and expected flood levels. PD - General on-going monitoring of site flood conditions will be communicated to all personnel. NSW SES - The NSW SES issues Flood Bulletins during flood events. These are emailed out to key stakeholders and members of the community during flood events and contain important up to date information about the relevant flood event. Refer to LFP specific requirements (see Section 9.2).	General Superintendent (GS) Environment and Sustainability Manager (ESM) NSW State Emergency Service (NSW SES)
Response (During Flood)	**Evacuation** ALL - In the event of a flood, personnel are to gather at the designated muster points which are located outside of the flood prone land. The designated muster points including evacuation routes are to be detailed as part of JHG's Incident Response Plan. NSW SES / PD - Regarding evacuation arrangements, this shall be considered carefully together with NSW SES in accordance with the LFP (Section 9.2). Agreed arrangements shall be included in the local response plans with Site Officers trained to cover the additional sites/areas. The Incident Response Plan shall be available at the site office and awareness raised amongst construction workers. ALL – All Project personnel will adhere to the evacuation advice of the NSW SES, with any remaining personnel (i.e. those who did not self-evacuate) utilising the accommodation facilities provided at the Stockinbingal Camp in the first instance or alternatively a NSW SES or OEM established evacuation facility (as detailed below or in the Local Flood Plan for the Shire). NOTE: The Stockinbingal Camp is outside the area impacted by the 1% AEP Flood Event and will remain open for use to accommodate Project personnel where it is safe to do so. The NSW SES would be consulted following the commencement of construction regarding this. ALL - NSW SES (Ph. 132 500) are to be contacted for emergency assistance during a flood event. NOTE: Evacuation facilities (shelter) have been nominated in the Local Flood Plans for the Shires, these include: Stockinbingal Local Flood Plan (Shelters) Stockinbingal Bowling Club, Burley Griffin Way. Cootamundra Showgrounds, Pinkerton and Berthong Streets.	ALL – All Project personnel Project Director (PD) NSW State Emergency Service (NSW SES)
Recovery (After Flood)	**Recovery** CM / GS / DS / SM / SPE / EM - Following a flood event, a safety walk will be undertaken to identify unstable or danger areas. The recovery team will need to take note of any flood damage to access roads, check for any relocated equipment, stock or debris moved by flood waters. SPE - The structural integrity of temporary flood mitigation measures (bunds, diversions, platforms, levees) are to be checked. Maintenance / repair actions are to be identified. SPE / SM / EM - Partially constructed structures within waterways need to be checked for safety hazards, water damage and erosion. Maintenance / repair actions are to be identified. SPE / SM / EM - Culverts under railway and roads surrounding the site are to be inspected for blockages and potential damage. SPE / SM / EM – Review, removal and/or repair of any facilities/equipment caused by the flood where applicable.	Senior Project Engineer (SPE) Construction Manager (CM) General Superintendent (GS) Discipline Superintendent (Rail, Earthworks, etc) (DS) Environment and Sustainability Manager (ESM)

Stage	Construction Phase Flood Emergency Response Plan	Responsibility
	SM - Flood markings on buildings or infrastructure are to be recorded wherever available for future reference and insurance purposes. GS / DS / EM - Any water captured in areas of the site will be dewatered in accordance with the SWMSP. EM - Water Quality Monitoring will be carried out in accordance with the SWMP (monitoring after rainfall events). CM / GS / DS / SM / SPE / EM – Post flood, a lesson's learnt workshop will be undertaken with all key Project personnel. Any findings and / or recommendations will be incorporated into the FERP. EM - The Post Severe Weather / Flood Survey (Appendix C) will be distributed to key Project Personnel and requested these be completed. Any findings and / or recommendations will be considered and potentially incorporated into the FERP.	

9.2 Regional Local Flood Plans

Junee Shire Council and Cootamundra-Gundagai Regional Council each have structured LFPs for the region. These plans identify flood risks in the Shire and present preparedness, response, co-ordination, and operations for all levels of flooding throughout the region.

The Cootamundra-Gundagai Regional Council area is within the Murrumbidgee SES Regions: 14 and 23. For emergency management purposes this region is part of the Southern Highlands Emergency Management District. The LFP from the (former) Cootamundra Shire Council, The Cootamundra LFP (SES, 2007) governs flood emergency management arrangements for the urban areas of Stockinbingal.

The plan outlines that the RFS and Cootamundra SES Local Controller is responsible for providing personnel in rural areas and villages information about gauge heights, flood conditions and response needs in their own communities and to disseminate flood information.

The Cootamundra LFP indicates that ARTC are to close and re-open railway lines as necessary and advise the Cootamundra SES Local Controller accordingly.

The LFP also indicates that no formal flood warnings are provided directly to the Cootamundra Shire Council area by the BoM. Instead, Council must access the BoM Flood Warning information via the BoM website: http://www.bom.gov.au/nsw/warnings/

Stockinbingal gauge at Sunnydale and Dudauman gauge at Wattle Creek are used by the BoM as part of these warnings.

Flood emergency information issued by Murrumbidgee SES Regional Headquarters include:

- SES Livestock and Equipment Warnings. Following heavy rain or when there are indications of significant creek or river rises (even to levels below Minor Flood heights)
- BoM Flood Watches
- SES Local Flood Advice
- Evacuation Warnings
- Standard Emergency Warning Signal (SEWS).

The nearest evacuation centres to the Project site are:

- Cootamundra Showgrounds, Pinkerton and Berthong Streets
- Stockinbingal Bowling Club, Burley Griffin Way.

It has been observed that Stockinbingal can become isolated for short periods of time with little warning and Burley Griffin Way may experience inundation.

Additionally, the following highways and main roads are subject to flooding at the following locations within the Junee Local Government Area:

- Olympic Way (MR Rd 78, Junee-Wagga Wagga: may close in rare, severe events at Houlaghans Creek near Reedy Creek confluence (Wallacetown) or at Ulandra Creek (Bethungra). Closure anticipated to last a few hours. Access to Wagga Wagga can be cut for up to a few weeks in severe events at North Wagga Wagga and could be cut on averages every two to three years for 1-2days.
- Many minor roads with low causeways can be cut from thunderstorm rains and other local flooding, typically for 2-3 hours at most.

A flowchart has been developed to provide an overview of the emergency response process in place that the Project team will follow in the event of a potential flood event. This flowchart breaks down the key actions and responsibilities described in this section above and is included in Appendix F of this Plan.

10 Flood Emergency Mitigation and Management Measures

In addition to the mitigation and management measures provided in previous sections, the following general mitigation and management measures associated with flood emergency management in Table 10-1 will be implemented throughout the Project. It's noted that the mitigation and management measures in the SWMSP should also be reviewed and implemented.

Table 10-1 Flood emergency mitigation and management measures

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
General				
FEM1	This FEMP is to approved by the Planning Secretary prior to the commencement of Construction.	Prior to construction	Environment and Sustainability Manager	CoA C15
FEM2	Develop SEP/SAP which should include identification of flood risk areas / sensitive areas and relevant management measures. See Section 5 of the CEMP for further details.	Prior to construction	Environment and Sustainability Manager	CEMP
FEM3	The SEP/SAPs will identify whether there are any environmentally sensitive areas in close proximity to the areas shown to convey water and if required, take additional measures to ensure that construction works do not worsen the impact to these environmentally sensitive areas with regards to flood management. See Section 5 of the CEMP for further details.	Prior to construction Construction	Environment and Sustainability Manager, Construction Manager	Best Practice
FEM4	All staff and subcontractors will undergo Project-specific induction training that includes relevant flood emergency management matters and associated management measures that must be implemented and taken into account when planning and delivering the work.	Prior to construction Construction	Environment and Sustainability Manager	CoA C13
FEM5	JHG will constantly monitor 7-day weather forecasts and record weather conditions using various nearby weather stations and site weather stations (where required) as detailed in Section 8.	Construction	Environment and Sustainability Manager	CEMP, Best Practice
FEM6	JHG will implement the early warning strategy (as described in Section 8). Where floods are likely to occur and/or triggers met, the FERP (Section 9) and any other relevant measures described in this FEMP will be implemented.	Construction	Environment and Sustainability Manager, Construction Manager, Site Supervisor	Best Practice
FEM7	Any incidents, non-compliances and non-conformances are to be managed in accordance with Section 8 of the CEMP. Notification of flood emergency related incidents is to be made to IRPL and any relevant statutory authorities. Any communication required with IRPL and statutory authorities shall be limited to the Environment and Sustainability Manager (or suitable delegate) and/or the Construction Manager.	Construction	Environment and Sustainability Manager, Construction Manager	CoA A34 and A35 CEMF, CEMP

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
FEM8	A Soil and Water Management Sub-plan (SWMSP) would be prepared and implemented as part of the CEMP. The plan would include measures, processes and responsibilities to minimise the potential for soil and water impacts (including impacts to groundwater and geomorphology) and also details flood management measures to be implemented during construction.	Prior to construction	Environment and Sustainability Manager,	RMM HF-6 SWMSP
FEM9	Construction planning and the layout of construction work sites and compounds will be carried out with consideration of overland flow paths and flood risk, avoiding flood-liable land and flood events, where practicable. For the sites located in flood-prone land, and where temporary obstruction of overland flows or drainage systems cannot be avoided, further consideration of flood risk will be carried out to develop the staging of works to minimise impacts of the Project and ensure proper management of a flood event at all stages of construction.	Prior to construction Construction	Environment and Sustainability Manager, Construction Manager	Best Practice RMM HF-5
FEM10	Plant, equipment, stockpiles and other construction materials will be positioned to ensure they do not increase or worsen the impacts associated with flooding, nor does the permanent works, as constructed at the time of flood.	Construction	Environment and Sustainability Manager, Site Supervisor	Best Practice
FEM11	No stockpiles of materials, construction equipment or storage of fuels or chemicals within low lying areas, waterways, or drainage lines.	Construction	Environment and Sustainability Manager, Site Supervisor	Best Practice CEMF Table 3
FEM12	During times of significant rainfall or predicted significant rainfall or flooding, the JHG Environment and Sustainability Manager (or delegate) will be consulted, and work activities reassessed for potential impact to flooding.	Construction	Environment and Sustainability Manager, Construction Manager, Site Supervisor	Best Practice
FEM13	A SSFP (template provided in Appendix B) will be prepared for the sites located within a flood-prone area.	Prior to construction Construction	Construction Manager	Best Practice
FEM14	Suitable site preparation works will occur in accordance with the relevant SSFP (template in Appendix B) in the event that a Flood Watch or Flood Warning is issued by BOM.	Prior to construction Construction	Construction Manager	Best Practice
FEM15	The SSFP (Appendix B) for each area will include a review of the Flood Impact Mapping (Appendix B) from the EIS to determine the areas anticipated to be impacted by a flood event and to ensure the following is considered and where relevant actioned when a Flood Warning is issued by BoM: • All stockpiles of materials, plant, machinery and general construction equipment is repositioned to reduce risk of exposure to the pending flood event.	Prior to construction Construction	Construction Manager	Best Practice

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
	• All hazardous materials, chemicals, fuels and ablution blocks are repositioned to reduce the risk of exposure to the pending flood event. • If mainline earthworks have commenced, then sufficient drainage (i.e. cross-sectional area equal to or greater than previous) must be provided at existing culvert locations.			
FEM16	Wet weather preparedness and response plan to be completed and provided to ARTC/IRPL in August of each year unless an alternative timeframe is agreed with ARTC/IRPL	Prior to construction Construction	Construction Manager	CEMF Table 3
FEM17	All equipment, personnel and materials shall be sufficient and available on site to respond to wet weather events and regular maintenance of erosion and sediment controls is to be completed pre and post wet weather events	Prior to construction Construction	Environment and Sustainability Manager, Construction Manager, Site Supervisor	CEMF Table 3
FEM18	Regular (timeframe to be agreed with IRPL and, failing agreement, as determined by the IRPL Representative) demonstration of sufficient resources to effectively respond in a timely manner to an emergency event on Site	Construction	Construction Manager	CEMF Table 3
FEM19	No temporary construction stockpiles to be located within 5m of drainage lines, below 20 year flood levels, 10m from a watercourse or any area otherwise likely to be inundated with water unless it has been appropriately risk assessed by the Certified Professional in Erosion and Sediment Control (CPESC). See further details in Section 8.2.2.1 for further location criteria for temporary stockpiles.	Construction	Environment and Sustainability Manager, Site Supervisor	RMM HF-5, SC-6
FEM20	Prior to construction impacting a landowner anywhere on the alignment, JHG will consult with the landowner and/or relevant roads authority that is located immediately adjacent to new or upgraded culverts to determine the potential for impacts on infrastructure, dwellings, property access, agricultural productivity, farm operations and farm dams (including changes in water supply yield, reliability of supply, flood flows and embankment stability) due to the introduction or alteration of flows. Where potential adverse impacts are identified, JHG will consult with the affected landowner or relevant roads authority on the management measures that will be implemented to mitigate the impacts. The outcomes of the consultation with affected landowners or relevant roads authority must be documented.	Construction	Construction Manager, Community and Stakeholder Manager	CoA E79
FEM21	All construction traffic, both light and heavy vehicles, will obey road closures due to flooding or otherwise.	Construction	All personnel	Best Practice
FEM22	Do not reduce watercourse flow areas.	Construction	Environment and Sustainability Manager,	Best Practice

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
			Construction Manager, Site Supervisor	
FEM23	Progressive Erosion and Sediment Control Plans (PESCP) are reviewed and in consultation with the CPESC improved accordingly and will include relevant flood provisions and management.	Construction	Environment and Sustainability Manager	Best Practice
FEM24	Minimising hard stand areas in the vicinity of the temporary workforce accommodation facility to minimise increases in runoff.	Prior to construction Construction	Construction Manager	RMM AHF-1
FEM25	Site drainage of the accommodation camp would be installed in accordance with the recommendations in Managing Urban Stormwater: Soils and construction - Volume 1 (Landcom, 2004)	Prior to construction Construction	Construction Manager	RMM AHF-2 SEMP TWAFMP
FEM26	Stormwater drainage infrastructure would be included under proposed access tracks and roads to maintain existing local overland flows to the farm dam to the north of the accommodation camp site	Prior to construction Construction	Construction Manager	RMM AHF-3 SEMP TWAFMP
FEM27	A stormwater detention basin would be constructed at the accommodation camp (indicative location would be in the northern portion of the lot) to capture stormwater runoff from the car park during the 10% AEP flood event and will be designed in accordance with the SWMSP (refer to WQ- 3).	Prior to construction Construction	Construction Manager	RMM AHF-4 SEMP TWAFMP
FEM28	The Project boundary of the temporary workforce accommodation facility on impact zone defined for the Project would allow sufficient room for provision of temporary and permanent erosion and sediment control measures/pollution control measures where required based on consideration of overland flow paths and flood risk. Water quality control measures would be designed to capture and treat the 80th percentile five-day rainfall event and any other requirements as outlined in the Blue Book.	Prior to construction Construction	Construction Manager, Environment and Sustainability Manager	RMM WQ-1 SWMSP
FEM29	Ancillary facilities will be located at least 50m from watercourses and outside the 5% AEP flood zone where possible.	Prior to construction Construction	Construction Manager, Environment and Sustainability Manager	Best Practice
FEM30	Where possible, the permanent drainage arrangement (i.e. longitudinal and transverse drainage) will be installed prior to mainline earthworks occurring. Where this cannot be undertaken, mainline earthworks will not be completed in the locations of new culverts. At these locations, a sufficient break will be left within the embankment, extending beyond the	Prior to construction	Construction Manager, Environment and Sustainability Manager	Best Practice

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
	footprint of the proposed culvert to allow adequate flows, those being equal to or better than, pre-construction conditions.			
FEM31	The installation of flood mitigation measures (as per the flood design verification report (CoA E47-67)) will be installed as soon as practical during construction to manage the risk of adverse flooding impacts during construction, particularly those in flood prone areas i.e. drainage lines, waterways, floodplains etc.	Prior to construction Construction	Construction Manager, Environment and Sustainability Manager	CoA C25(d)
FEM32	All culvert and bridge demolition and construction would be undertaken in a manner that minimises, as far as practical, the potential flooding on the waterway and surrounding environment. This would be achieved by: • No stockpiling or storage of materials or equipment in the main drainage channel. • Monitoring the weather forecast and associated warnings and removing materials that may restrict flow. • Ensuring a clean water flow is maintained as far as practical.	Prior to construction	Construction Manager, Environment and Sustainability Manager, Site Supervisor	Best Practice
FEM33	The installation of temporary fencing and culverts to be used during construction, is to be appropriately designed to ensure that it does not exacerbate any flooding impacts, as assessed in the EIS. Relevant temporary structures which are installed in flood prone areas will be subject to a temporary works design (see FEMP 34) which will consider flood impacts.	Prior to construction Construction	Construction Manager, Environment and Sustainability Manager, Site Supervisor, Senior Project Engineer	CoA C25(d)
FEM34	All temporary works performed by JHG will be planned, designed, and constructed in accordance with the following requirements: • All temporary works must be designed by a suitably qualified and experienced Engineer in accordance with any relevant, third party design standards and guidelines. • Relevant temporary works must be constructed in accordance with an approved Task Risk Assessment (TRA) detailing the construction steps, stages and methodology of the works. • Where temporary works may pose a risk to the worsening of flood impacts, it must be peered reviewed by a suitably qualified and experienced hydrologist. NOTE: The Hydrologist is to ensure that the proposed works do not significantly adversely affect flood behaviour and shall be assessed in terms of their potential impacts on hydraulic hazard both inside or outside the rail alignment during any flood event up to and including a 5% AEP flood event. The proposed temporary works will not commence until the Hydrologist has approved the works to proceed.	Prior to construction Construction	Construction Manager, Environment and Sustainability Manager, Site Supervisor, Senior Project Engineer	Best Practice

Ref	Measure / Requirement	When to implement	Responsibility	Reference / Source
	A SSFP (Appendix B) will be prepared for the site that includes the temporary works and flood preparation and response measures specific to those works. • If temporary drainage arrangements are required, these will be sufficiently sized for the anticipated flow. • - In the event of a Flood Watch or Flood Warning issued by BoM, temporary works (i.e. temporary waterway crossing etc) are assessed and removed where reasonable and feasible.			
FEM35	Following a flood event where flood waters enter or impact a work area, a Post Severe Weather / Flood Survey / Flood Inspection will be undertaken (Appendix C)	Construction (post flood)	Construction Manager, Environment and Sustainability Manager, Site Supervisor,	Best Practice
FEM36	Temporary works and the associated construction methodologies will be planned, designed, and constructed to ensure potential construction phase flooding impacts are identified and appropriately managed. Flood modelling/assessments will be performed for temporary work activities and scenarios including: • key stages of temporary embankment opening during demolition/reconstruction that could pass additional flow downstream • location and level of long term construction facilities (such as compounds, access tracks and stockpiles) that could obstruct and divert flows • location and level of temporary works in waterways and overland flow paths during bridge and culvert construction that could obstruct and divert flows. The construction phase flood modelling/assessment/swill be iterated through sufficient scenarios to inform planning of the works such that construction phase flood impacts are identified and managed accordingly. Results from the above modelling/assessment, and any subsequent mitigation measures/actions, will be integrated into the SSFP for that area (template provided in Appendix B) and also the relevant Activity method Statement (AMS) and TRA) documentation. Also refer to the Flood Risk Assessment (Appendix E) which provides further flood management requirements for temporary works.	Prior to Construction Construction	Construction Manager, Environment and Sustainability Manager,	RMM HF-5

10.1 Design and Operational Flood Emergency Management

Table 10-2 details the flood emergency management related design requirements and how they will be implemented for the Project. Although these requirements are not directly managed via the FEMP, they provide greater context as to how the Project will manage flooding through design, construction and operation.

Table 10-2 Flood emergency management in design

CoA/RMM Number	CoA Requirements	Document Reference
CoA E47	All practicable measures must be implemented to ensure the design, construction and operation of the CSSI will not adversely affect flood behaviour, or adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E48	The hydraulic and hydrological flood modelling undertaken during the design of the CSSI and the assessment of its flood impacts must be undertaken consistent with the Flood Modelling Specifications listed in APPENDIX B SCHEDULE 2. In addition the modelling must be to a standard equal to or better than that in the RtS referenced in Condition A1. In the event of any inconsistency between the flood modelling in the RtS and the Flooding Modelling Specifications listed in APPENDIX B SCHEDULE 2, the Flood Modelling Specifications prevail.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E54	The CSSI must be designed with the objective to meet or improve upon the flood performance identified in the RtS referenced in Condition A1. Variation consistent with the requirements of this approval at the rail corridor is permitted to effect minor changes to the RtS design with the intent of improving the flood performance of the CSSI.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E55	The CSSI must be designed and constructed so changes in the flood behaviour will not exceed the Quantitative Design Limits (QDLs) listed in APPENDIX BSCHEDULE 1, as assessed in accordance with the flood modelling specifications in APPENDIX BSCHEDULE 2, except as provided in Condition E58 below.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E64	A Flood Design Verification Report (FDVR) must be prepared to detail flood behaviour under existing conditions and how this would change with the final detailed design of the approved CSSI. The FDVR must demonstrate compliance (or otherwise) with Conditions E54 to E58.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E66	The Flood Design Verification Report must be submitted to the Planning Secretary for approval at least one month prior to the commencement of construction of permanent works that may impact on flooding. Works that may impact on flooding cannot commence until the Flood Design Verification Report is approved by the Planning Secretary. The Flood Design Verification Report including the flood	Drainage design reports and drawings, flood modelling and associated reports, Flood

CoA/RMM Number	CoA Requirements	Document Reference
	model and the model results must be submitted for review by BCS, DCCEEW Water, TfNSW and Councils and any comments received addressed prior to submitting the Flood Design Verification Report to the Planning Secretary. Note: Where the information included in the FDVR relates to that reviewed by an independent peer reviewer in accordance with Condition E49, the Planning Secretary will consider how any findings or recommendations made by the Independent Peer Reviewer were addressed and resolved. For the purposes of Condition E66, "permanent works that may impact of flooding" includes but is not limited to: any flood storage, earthen embankment, viaduct, bridge, rail formation, culverts, and drainage including longitudinal drainage.	Design Verification Report
CoA E66	The Proponent may provide a program for review of an interim FDVR at defined point/s of Project design development by the Planning Secretary, in consultation with BCS, DCCEEW Water, TfNSW and Councils. The program must be submitted to the Planning Secretary at least one month before the date an Interim FDVR would be submitted. This program must: define the points at which complete interim versions of the FDVR will be provided for review; provide for review of a detailed methodology of the formation failure assessment required by Condition E65(g); allow each agency and the Planning Secretary at least one month for each review of the interim FDVR; provide for every version of the interim FDVR: (i)an interim Independent Peer Review of Hydraulic and Hydrological Modelling to meet the requirements of Condition E49; and (ii) each of the requirements of the FDVR detailed in Condition E65; and detail the process for revising the FDVR in response to comments provided on the interim FDVR. The Final FDVR required by Condition E65 must include a summary of comments received on the Interim FDVR and how these were addressed.	Drainage design reports and drawings, flood modelling and associated reports, (Interim) Flood Design Verification Report
CoA E73	The Proponent must prepare and implement a Flood Emergency Response Plan (FERP) which documents how the risks to life and property within the rail corridor are to be safely managed during a flood. The FERP must detail activities before, during and after a flood, including for staff training and maintenance, and updating of the FERP. The FERP must: (a) be prepared by an experienced flood emergency response specialist who has extensive experience in preparation of these plans; (b) must confirm that residual flood risks are acceptable and the procedures within the FERP are consistent with best practice and the requirements of the Flood Risk Management Manual (2023) and its 'Toolkit'; (c) be appended to the Flood Design Verification Report, and (d) detail the development of a flood warning system in the upper reaches of Dudauman Creek. The flood warning system should have the capacity to be adapted for use during the operational stage as a formal flood warning system for Stockinbingal.	Flood Emergency Response Plan (FERP)[Operational] which is an appendix to the FDVR

CoA/RMM Number	CoA Requirements	Document Reference
	Once operational, equipment or plans developed for the Flood Emergency Response Plan (FERP) must be offered to the relevant agency for ongoing implementation and use. Note: Nothing in this condition prevents the adaptation of an existing flood management or emergency plan to satisfy this condition.	
CoA E76	The CSSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with. Note: If it is proposed to discharge construction stormwater to waterways, a Water Pollution Impact Assessment will be required to inform licensing, consistent with Section 45 of the POEO Act. Any such assessment must be prepared in consultation with the EPA and be consistent with the	Drainage design reports and drawings.
CoA E77	The CSSI must be designed, constructed and operated to: (a) ensure all drainage feature crossings (permanent and temporary watercourse crossings and stream diversions) new or modified surface water drainage (including cess drains), depressions are designed and constructed and maintained in accordance with Guidelines for controlled activities on waterfront land: riparian corridors (Department of Industry, 2018) and Policy and Guidelines for Fish Habitat Conservation and Management (Department of Primary Industries, 2013); (b) locate all scour protection work associated with replacement culverts or the construction of new culverts within the rail corridor, or as agreed to by the relevant landowner in accordance with Condition E57; (c) ensure that there is no permanent interception of, and/or connection with, groundwater; (d) ensure all discharges from new or modified surface drainage (including cess drains) adjacent to the new and upgraded track are released at a controlled rate to prevent scour; and (e) ensure that any recycled wastewater (including recycled/treated water) proposed for use by the CSSI, considers risks to human health or the receiving environment and meets the relevant standards.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E81	The design of the Project including the longitudinal drainage and the cross drainage, is to be prepared to ensure there are no significant impacts to the farm dams in the Register and the other items listed in Condition E77. The hydrological modelling, calculations or other assessments demonstrating no significant impacts are to be documented.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
CoA E82	Where culverts, bridge abutments and other cross drainage structures are designed to pass flood and surface water flows through the rail formation, the orientation of these structures is to be aligned with the existing flow direction to minimise disturbance of existing flow patterns around the entries and exits to these structures, or as otherwise agreed by the Secretary.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design

CoA/RMM Number	CoA Requirements	Document Reference
		Verification Report
CoA E123	Permanent spoil mounds are to be located: (a) within the rail corridor; (b) at least 50 metres from any watercourse or culvert or where there is a risk of erosion or flood impacts during any flood event ; (c) at least 500 metres from any residence; and (d) outside the drip lines of trees located on private property. Note: For the purpose of Condition E123(d), the Proponent must not affect trees outside of the rail corridor for the purpose of preventing those trees' driplines overhanging spoil mounds.	Civil design reports and drawings, flood modelling and associated reports
CoA E124	Permanent spoil mounds are to comply with the following requirements: (a) maximum height must not exceed the top height of the upgraded rail line directly parallel to the spoil mound or two metres (whichever is the lesser); (b) not result in the clearing or covering of native vegetation beyond that described in the documents listed in Condition A1; (c) not result in heritage impacts beyond that described in the documents listed in Condition A1; (d) not result in additional changes to the upstream flooding regime beyond those described in the documents listed in Condition A1; (e) not affect the downstream flood regime; (f) not impede the flow of water through culverts; (g) not contain any contaminated soil classified as unsuitable for the proposed land use, acid sulphate soils or green waste; (h) are to be stabilised during construction of the CSSI; and (i) are to be stabilised following completion of construction of the CSSI.	Civil design reports and drawings, flood modelling and associated reports
RMM HF-1	The design would continue to be refined where practicable to not worsen existing flooding characteristics at sensitive receptors, up to and including the one per cent Annual Exceedance Probability (1% AEP) event. Detailed flood modelling would consider potential changes to: □ building and property inundation (including floor level surveys and consideration of existing inundation levels) □ contour banks and dams (including survey of these features to ensure continuous operation of these features) □ existing rail line, at rail connections □ level crossings and road flood levels and extent of flooding along roads □ overland flow paths and storage effects of construction and operational infrastructure. Flood modelling, and any mitigation identified as an outcome of modelling, would consider floodplain risk management plans, and would be undertaken in consultation with the relevant local council and local emergency management committees; the NSW Department of Planning and Environment, the NSW State Emergency Service and potentially impacted landholders landowners.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report

CoA/RMM Number	CoA Requirements	Document Reference
	Following refinement of the cross drainage design, where velocity QDL exceedances occur in land adjacent to the corridor that cannot be resolved through infrastructure measures within the corridor, justification of these residual exceedances will be documented and negotiate mitigation measures negotiated with the affected landowners for the affected land areas. Negotiation with landowners will occur through a structured Flood Consultation Protocol including the opportunity for mediation.	
RMM HF-3	Detailed design would consider channelling of water around Ironbong Road level crossing and Burley Griffin Way realignment, and the potential formation of detention basins as a means of retaining flows in a similar manner to existing farm dams and flood levees.	Drainage, bridge and level crossing design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
RMM HF-8	To mitigate flood risks to life or property beyond the rail corridor along Old Sydney Road, flood risk information would be provided in sufficient detail, e.g. through appropriate signage, so that relevant emergency services personnel and affected third parties are made aware of the potential for flooding west of the proposed raised level crossing.	Drainage design reports and drawings, flood modelling and associated reports, Flood Design Verification Report
RMM SC-1	Detailed design would include engineering measures to minimise operational risks from dispersive, saline and/or low strength soils, particularly through foundation and batter design.	Civil/geotechnical design reports and drawings

11 Compliance Management

11.1 Roles and Responsibilities

Section 7 of JHG CEMP details roles and responsibilities for environmental management (including flood emergency management). JHG Environment and Sustainability Manager has overall responsibility for the implementation of environmental matters on the Project and the JHG Safety Manager is responsible for field implementation of flood emergency control measures. Specific responsibilities for the implementation of emergency response are provided in the Flood Warning Strategy (Section 8), Flood Emergency Response Plan (Section 9) and general mitigation and management measures (Section 10).

11.2 Competence, Training and Awareness

All personnel performing environmental management activities for and on behalf of JHG will be appropriately trained, qualified and competent. Personnel performing specified assigned tasks shall be qualified on the basis of appropriate education, training, skills and/or experience, as appropriate.

All personnel who carry out works on the Project, including employees and sub-contractors, will undergo site induction training which will include flooding emergency management issues. The induction training will address site and/or construction activity specific impacts relating to bushfire and flooding emergency management including:

- Relevant requirements of this Plan;
- Relevant legislation and guidelines;
- The relevant management and mitigation measures;
- Evacuation routes and assembly areas for relevant locations;
- Emergency response and evacuation for flooding.

Additional daily and task-specific training and awareness material may be delivered to relevant staff and workforce, in the form of toolbox talks and pre-start meetings, to ensure that where detailed information is required, it is accessible to all involved with the Project. This includes evacuation routes and assembly areas for specific work areas.

11.3 Monitoring and Inspections

Table 11-1details the monitoring and inspections related to flood emergency management required to be undertaken during for the Project. A full list of monitoring and inspections is provided in Section 9 of the CEMP.

Table 11-1 Inspection and monitoring summary

Activity	Frequency	Responsibility	Record
Flood warning strategy as detailed in Section 8. Includes rainfall, streamflow monitoring, trigger levels, implementation etc.	Various, as detailed in Section 8	Various, as detailed in Section 8	Various, as detailed in Section 8
Daily visual surveillance for general observations for flood emergency controls	Daily	Site Supervisor/s	Site diary when notable items observed
General environmental inspections, which includes flood emergency controls	Weekly	Environment and Sustainability Manager/Advisor	JHG Environmental inspection checklist
Pre and post rainfall inspections i.e. >20mm forecast or received within a 24 hours period – refer to the	Prior and post wet weather event	Project Environment Team	Environmental and sustainability checklist

Activity	Frequency	Responsibility	Record
SWMSP. Will review effectiveness of flood management controls			
Post Severe Weather / Flood Survey / Flood Inspection	Following a flood event where flood waters enter or impact a work area	Construction Manager	Post Severe Weather / Flood Survey (Appendix C)
GMR inspection	Monthly	Site Supervisor, Environment and Sustainability Manager/Advisor	JHG Environmental inspection checklist GMR inspection form
ARTC/IRPL environmental inspections	As required	ARTC/IRPL personnel	ARTC/IRPL Environmental inspection checklist
ER inspections	As required	ER	ER Inspection Report
External agencies inspections	As required	External regulator	Agency inspection forms, checklists, emails or other relevant documentation.
High Risk Activity Inspections	As required	Construction Manager	High risk activity inspection checklist
CPESC inspections	Fortnightly or dependant on risk	Project Environment team supported by a CPESC as required.	Environmental and sustainability checklist and/or CPESC report

11.1 Non-compliance and Non-conformance

Non-compliances and non-conformances, including those related to flood emergency management, are detailed in Section 9 of the CEMP. This includes the definitions of non-compliance and non-conformance, corrective and preventative actions, communication of corrective and preventative actions to staff and non-conformance closeout.

11.2 Incident Response

Incident management, including those related to flood emergency management, are detailed in Section 8 of the CEMP. This includes incident classification, notification and reporting including to external authorities, incident investigation and closeout.

11.3 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 9 of the CEMP.

11.4 Reporting

Reporting will be undertaken in accordance with Section 9 of the CEMP.

11.5 Communication and Complaints Management

11.5.1 Community Communication Strategy

IRPL has prepared a CCS that meets the CoA, specifically B1 – B17. The CCS was approved by the Planning Secretary on 12 August 2024, as required by CoA B3. The CCS includes:

- Principles to guide the overall approach to community and stakeholder involvement

- Identification of the stakeholders and groups to be consulted during the Project
- identify details of the community and its demographics
- Procedures and mechanisms for the distribution of information about the Project, such as regular updates about establishment activities, the program for establishment activities and key milestone dates.
- Opportunities for the community to visit Project establishment sites
- A process for communication with adjacent/nearby developments for the management of potential cumulative impacts or emissions (noise, air or odour) from their sites
- Methods for involving establishment personnel in engaging with the local community
- Methods and tools for engaging with the local community, including community forums to discuss key environmental management issues of concern for the Project
- Procedures and mechanisms:
    - Detailing how the community can discuss or provide feedback in relation to the Project
    - Detailing how the Project team will respond to community enquiries and feedback
    - Describing how issues will be resolved or disputes meditated in relation to environmental management and establishment of the Project
    - identifying who will engage with the relevant stakeholders
    - Describing how to resolve any issues and mediate any disputes that may arise in relation to property and infrastructure impacts.

Where relevant, the IRPL Stakeholder Engagement Lead, IRPL Communications Lead (Southern NSW) and the Project Community Relations Manager will undertake consultation with proponents of other nearby developments to increase the overall awareness of Project / Project timeframes and impacts.

The CCS will be implemented for the duration of the Project through the implementation of the Project Communication Management Plan. JHG will prepare and implement a Complaints Management System (CoA B6) which aligns with the CCS.

11.5.2 Complaints Management

Section 7 of the CEMP details communication and complaints management processes and procedures. The CCS identifies key stakeholder groups that will be consulted and engaged with during the Project and outlines the communication tools that will be used to consult and engage with these groups. During construction, any comments, feedback or complaints relating to flood emergency management issues will be addressed through the Complaints Management System. The Complaints Management System includes a complaints register within the stakeholder database.

12 Review and Improvement

12.1 Continuous Improvement

Continuous improvement of this FEMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process is designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any nonconformances and deficiencies
- Regularly exercise the FEMP during construction including desktop and mock emergency drills.
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement, and
- Make comparisons with objectives and targets.

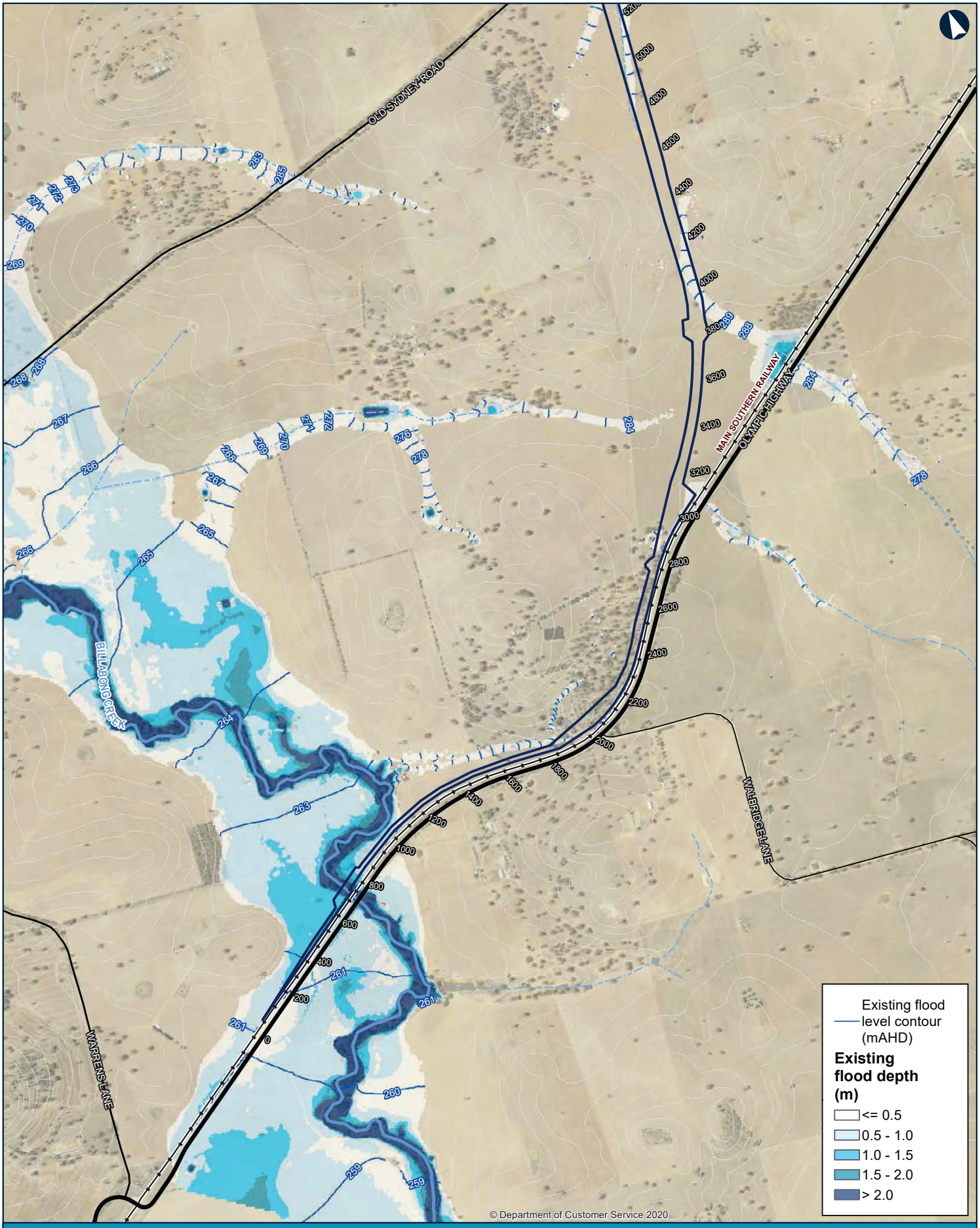
12.2 FERP Review and Revision Process

This FEMP is a ‘live’ and ‘working’ document. As required by JHG’s EMS requirements, the Environment and Sustainability Manager will conduct regular reviews of the FEMP at intervals of not less than six months and ensure that the FEMP is formally reviewed and updated at least annually, or earlier as change requirements dictate. The CEMP and sub-plans review, and revision process is discussed in detail in Section 9 of the CEMP. The FEMP may be updated in response to the following.

- Changes to the Project EMS.
- Non-compliances, incidents, or recurring issues.
- In response to internal or external audits.
- Changes in guidelines or legislation.
- Changes in the risk assessment.
- Changes in environmental management practices or technology.
- Following a flood event where improvements to this FEMP were identified.

Only the JHG Environment and Sustainability Manager, or delegate, has the authority to change any of the environmental management documentation.

Appendix A EIS Revised Hydrology and Flooding Impact Assessment Report



ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

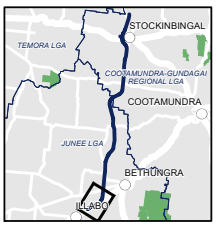
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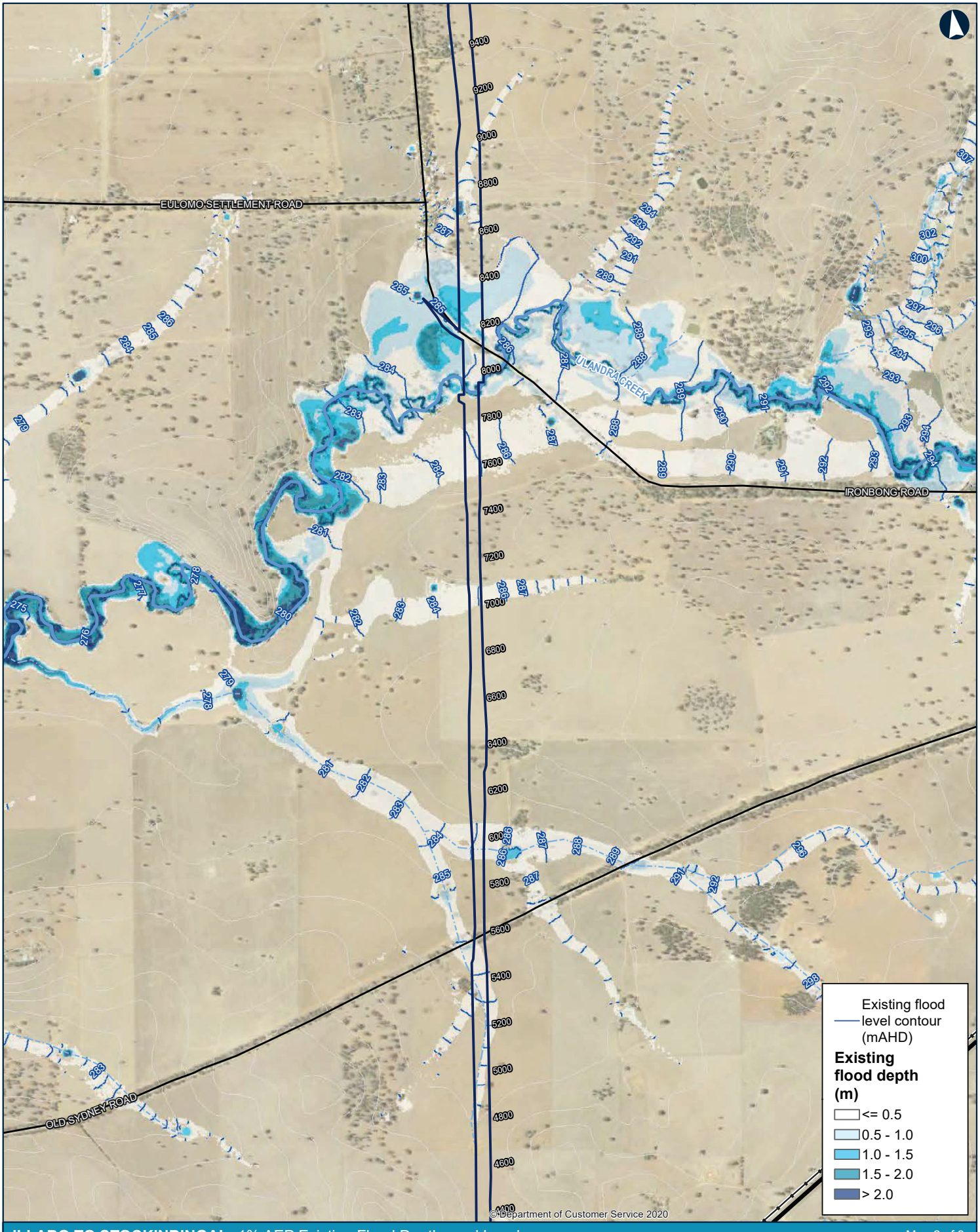
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- Major watercourse (Strahler SO 4-6)
- Local road
- Sub-arterial road
- Arterial road



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Existing flood level contour (mAHD)

Existing flood depth (m)

- <= 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

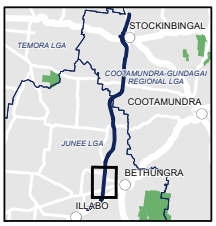
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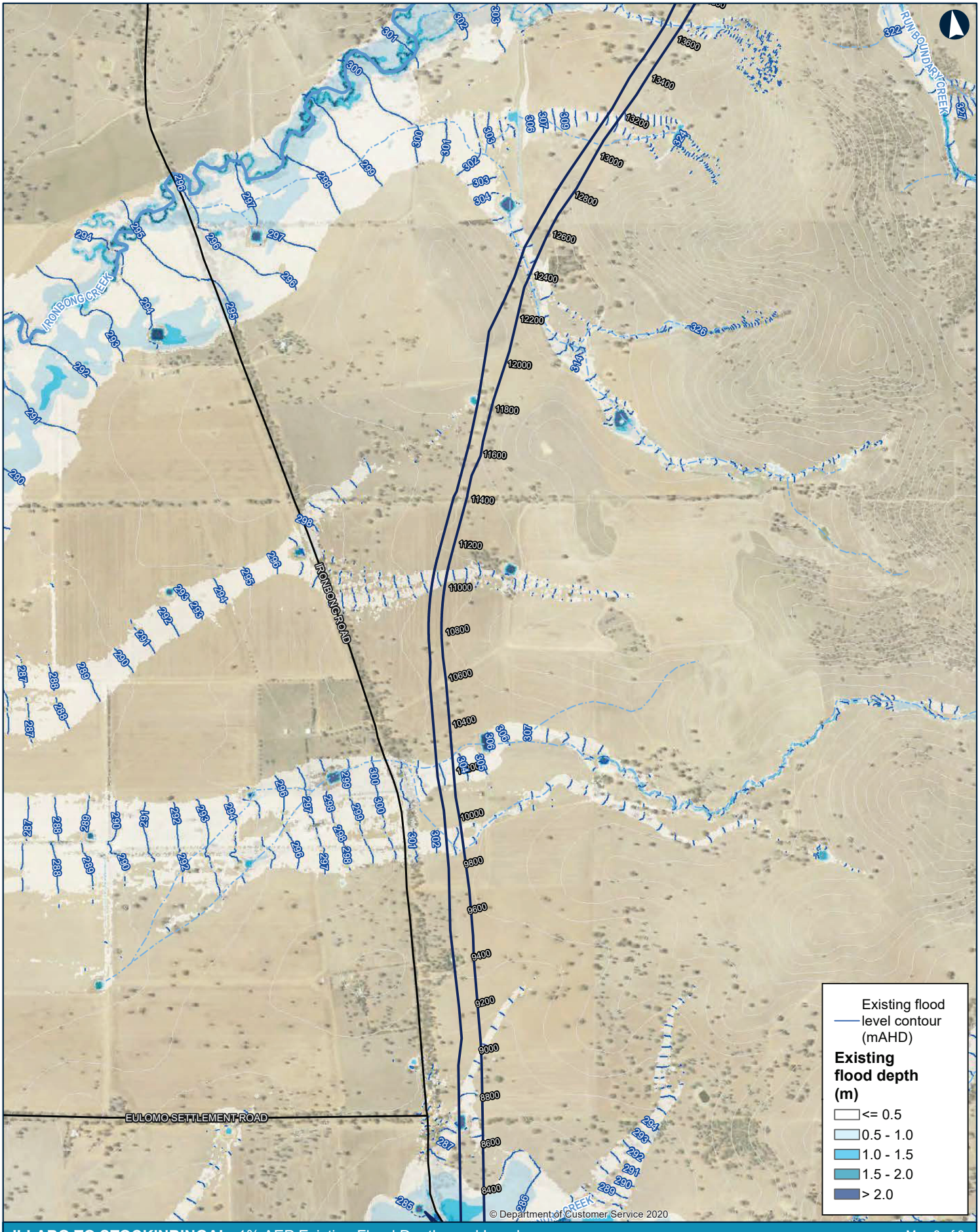
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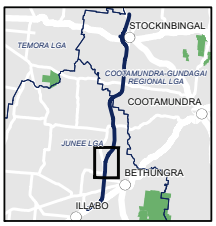
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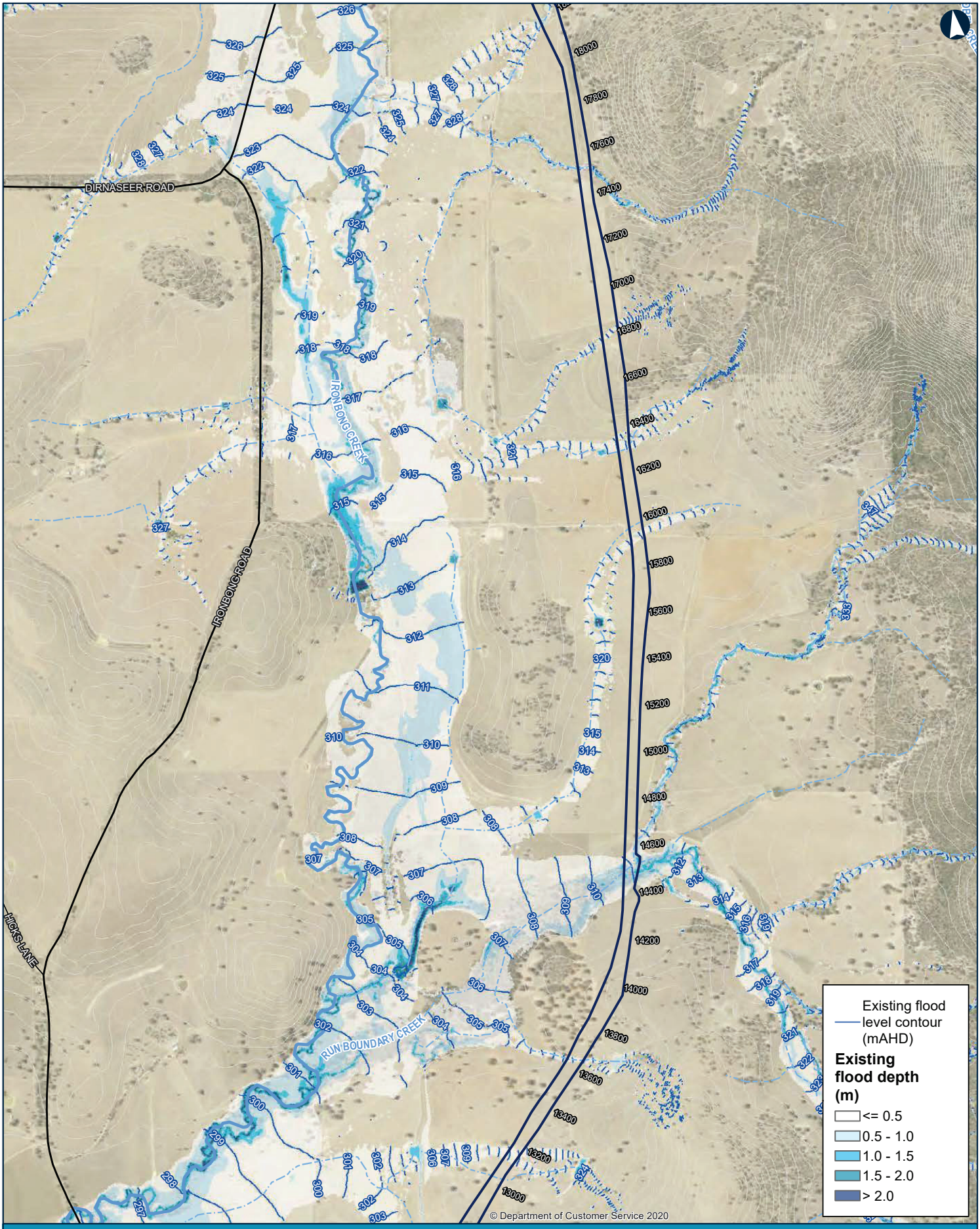
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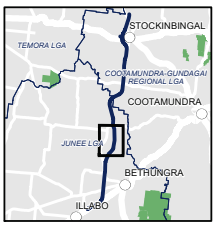
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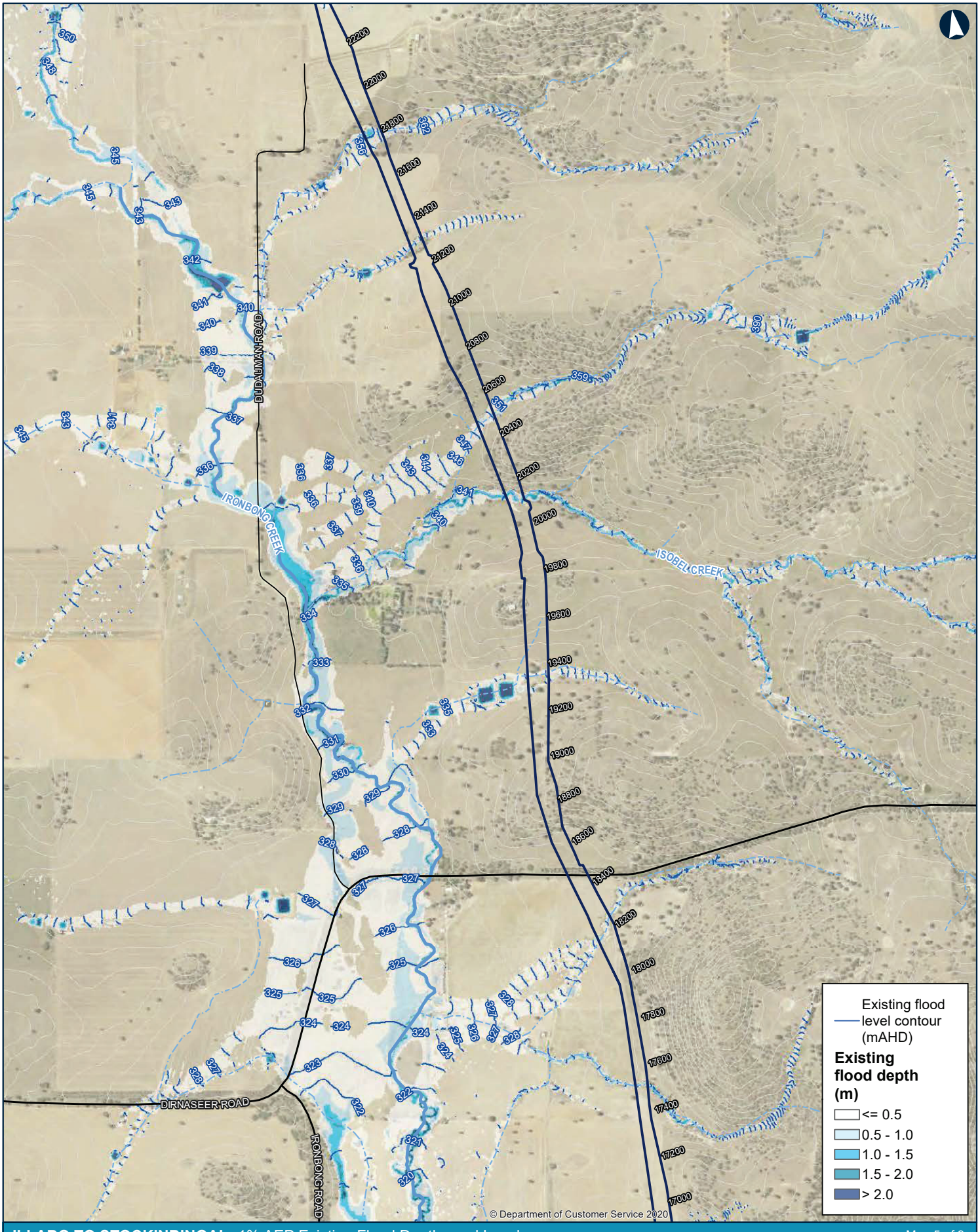
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ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

Map 5 of 9

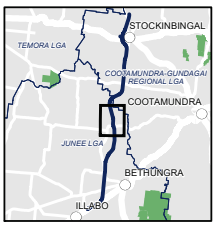
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ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

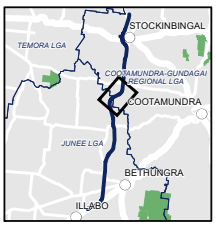
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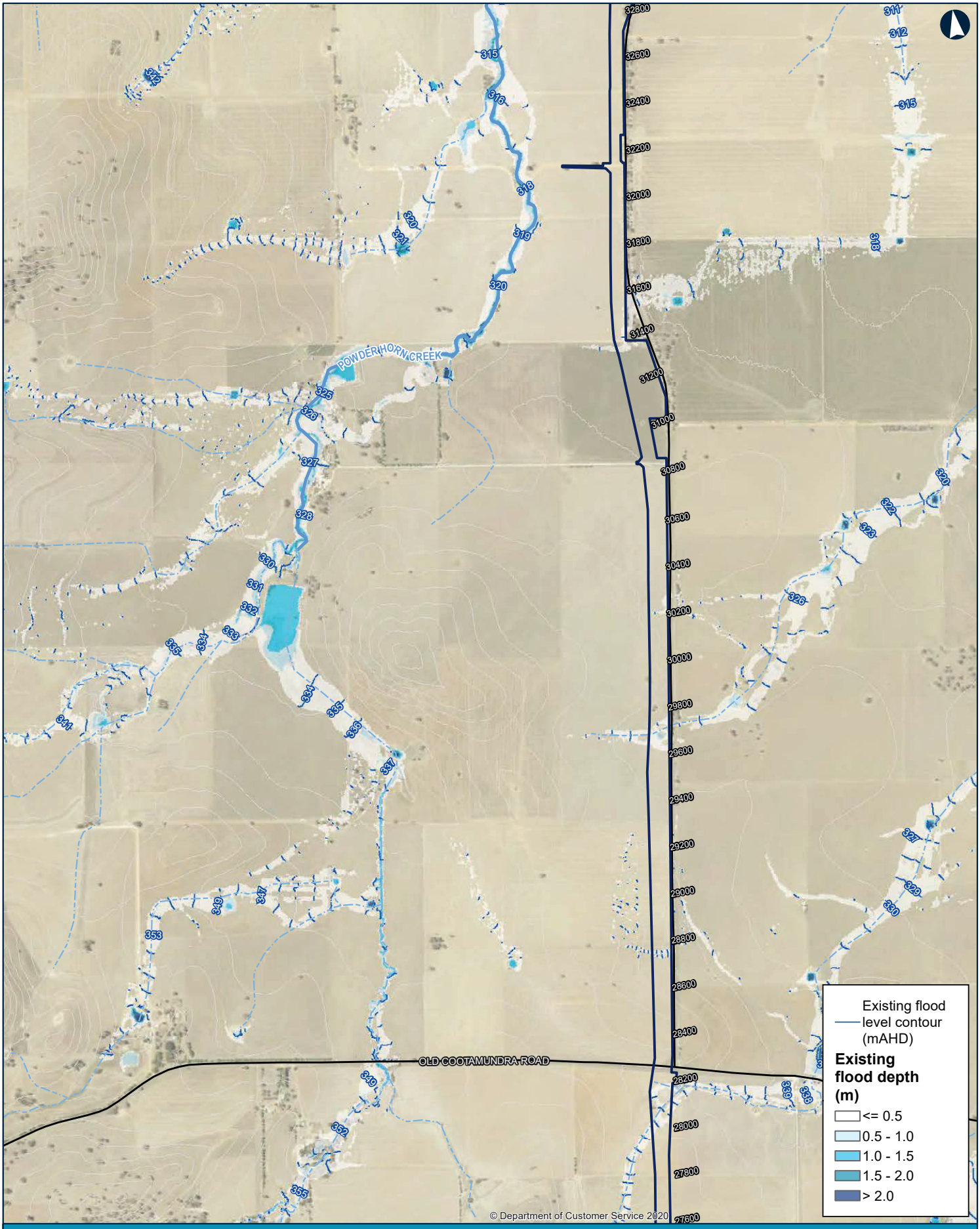
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ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

Map 7 of 9

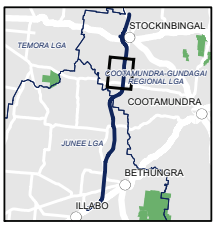
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Coordinate System: GDA 1994 MGA Zone 55

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Author: IRDJV Scale: 1:15,000
Data Sources: IRDJV, ARTC, LPI

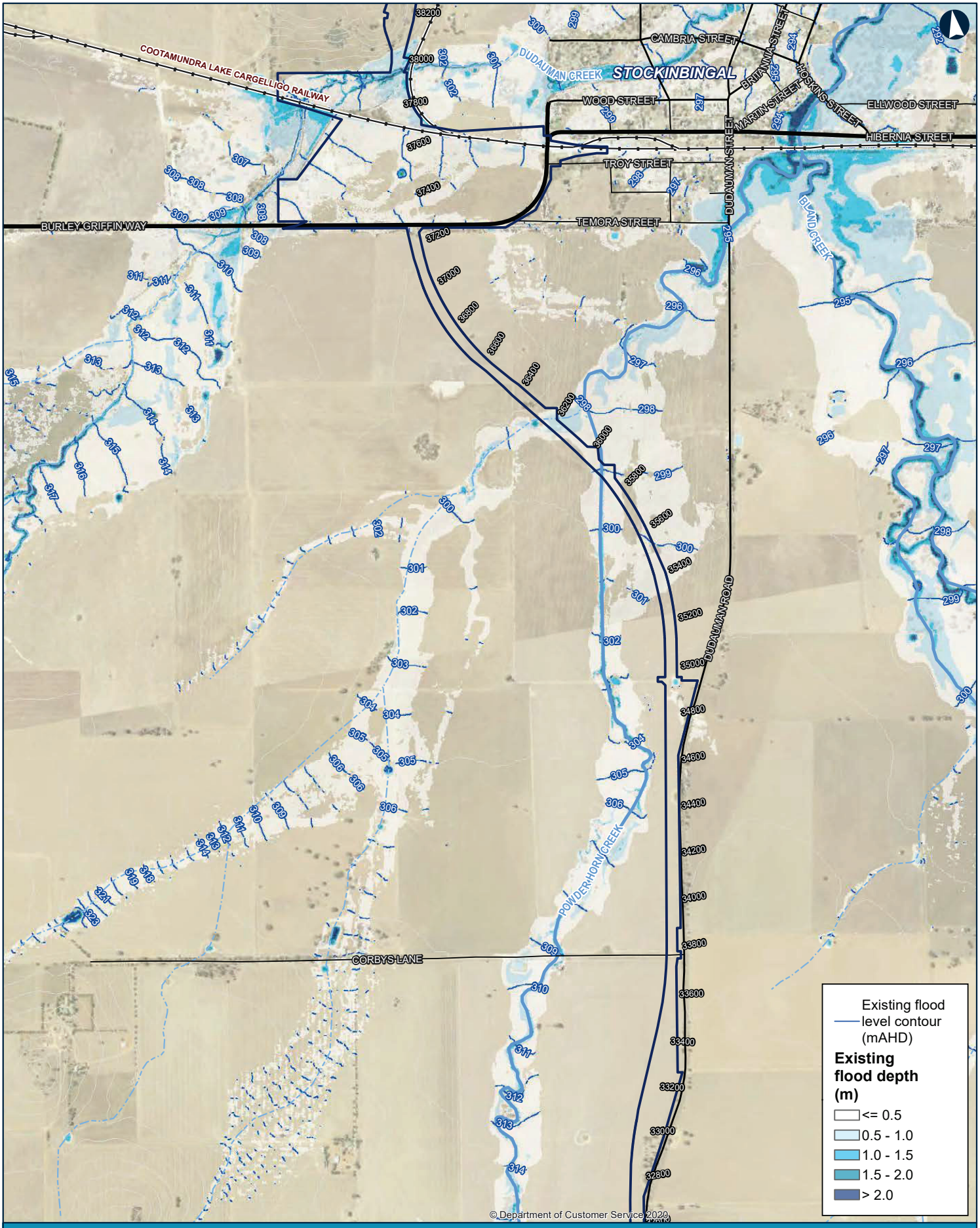
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ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

Map 8 of 9

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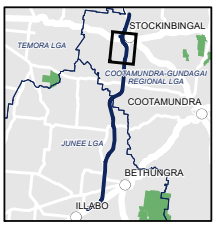
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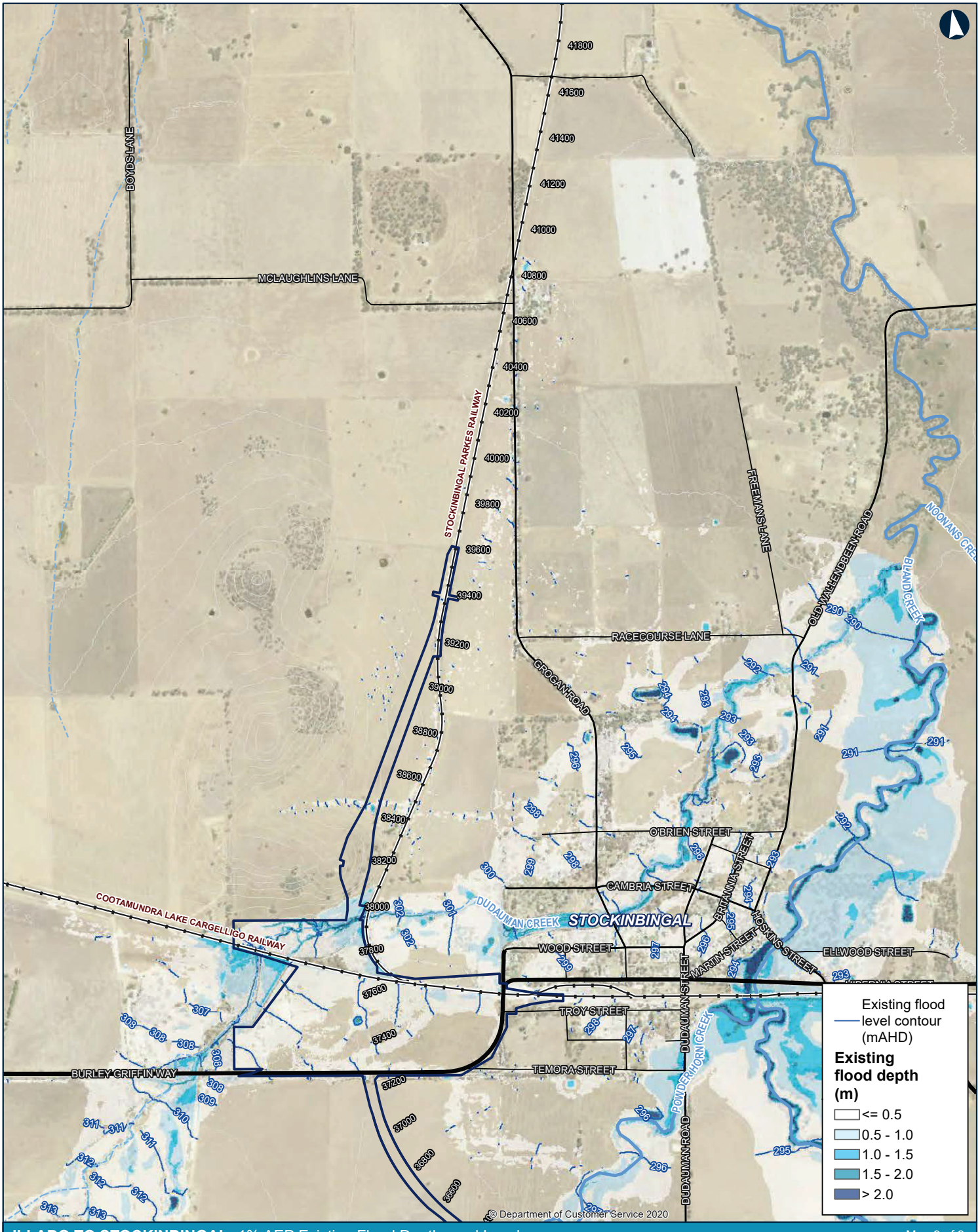
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ILLABO TO STOCKINBINGAL 1% AEP Existing Flood Depths and Levels

Map 9 of 9

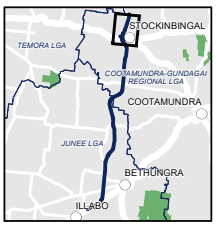
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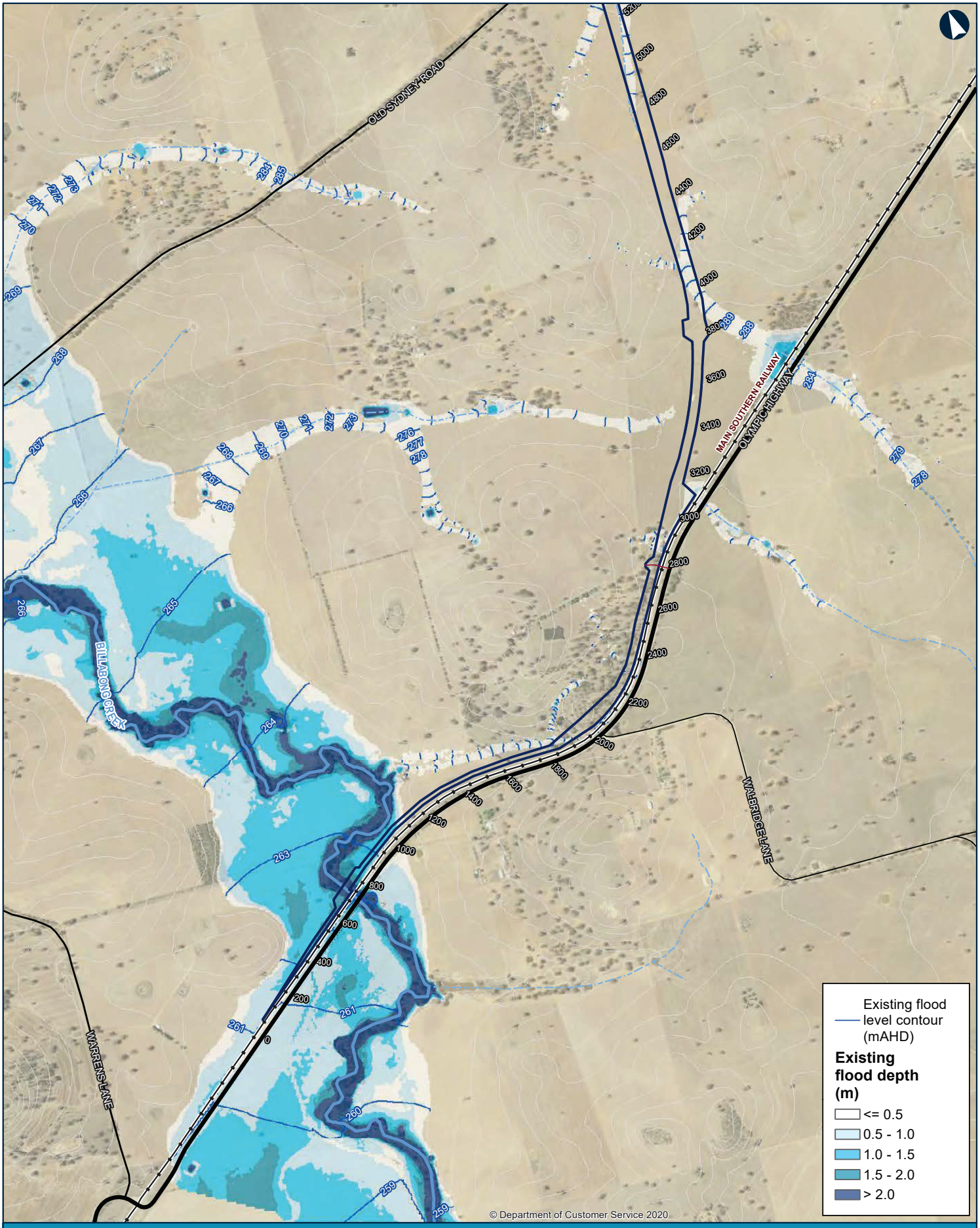
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

Map 1 of 9

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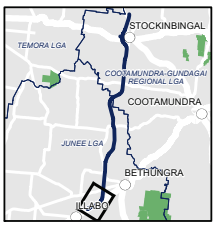
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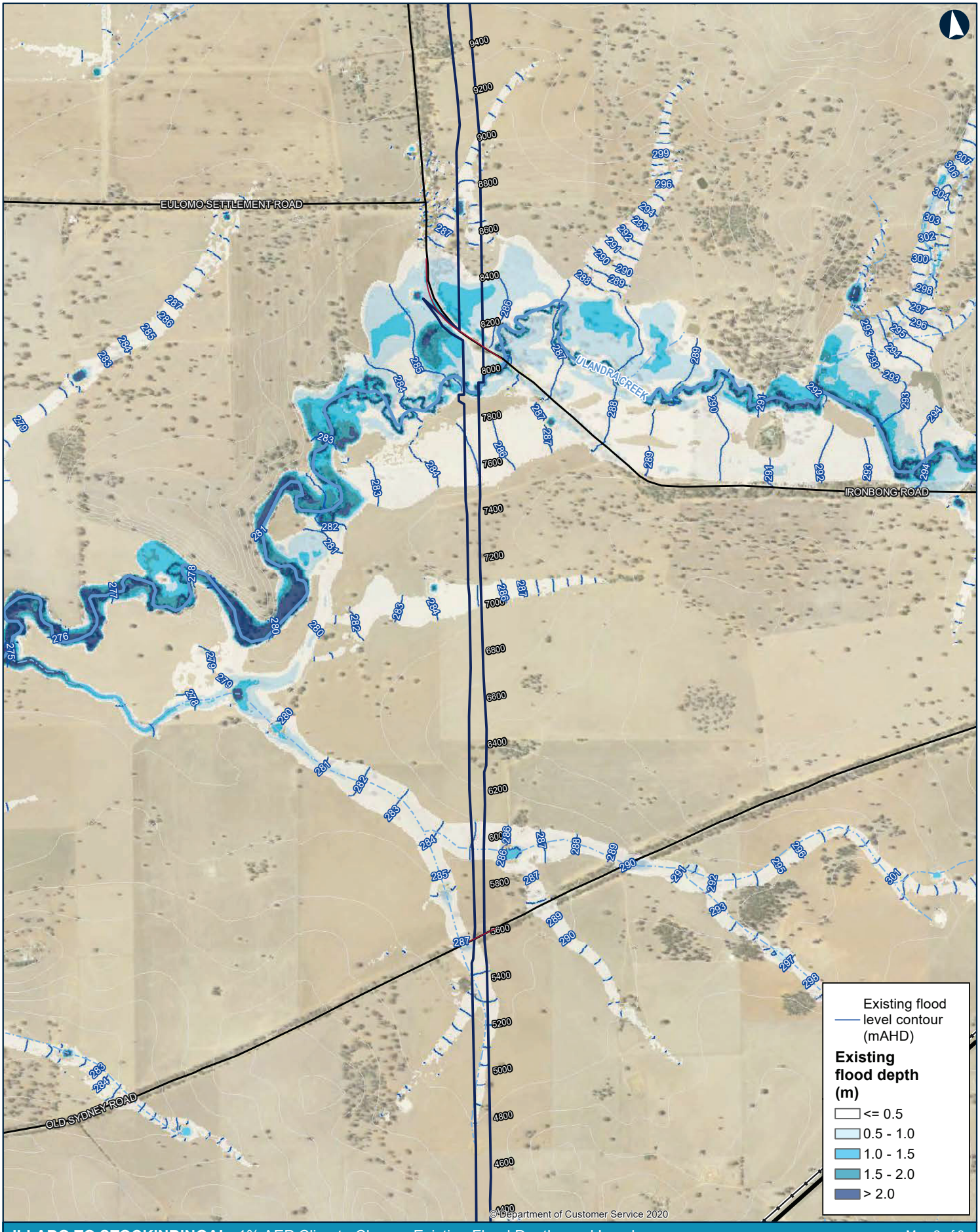
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

Map 2 of 9

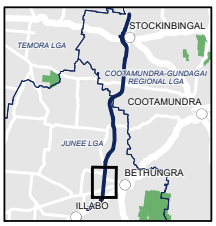
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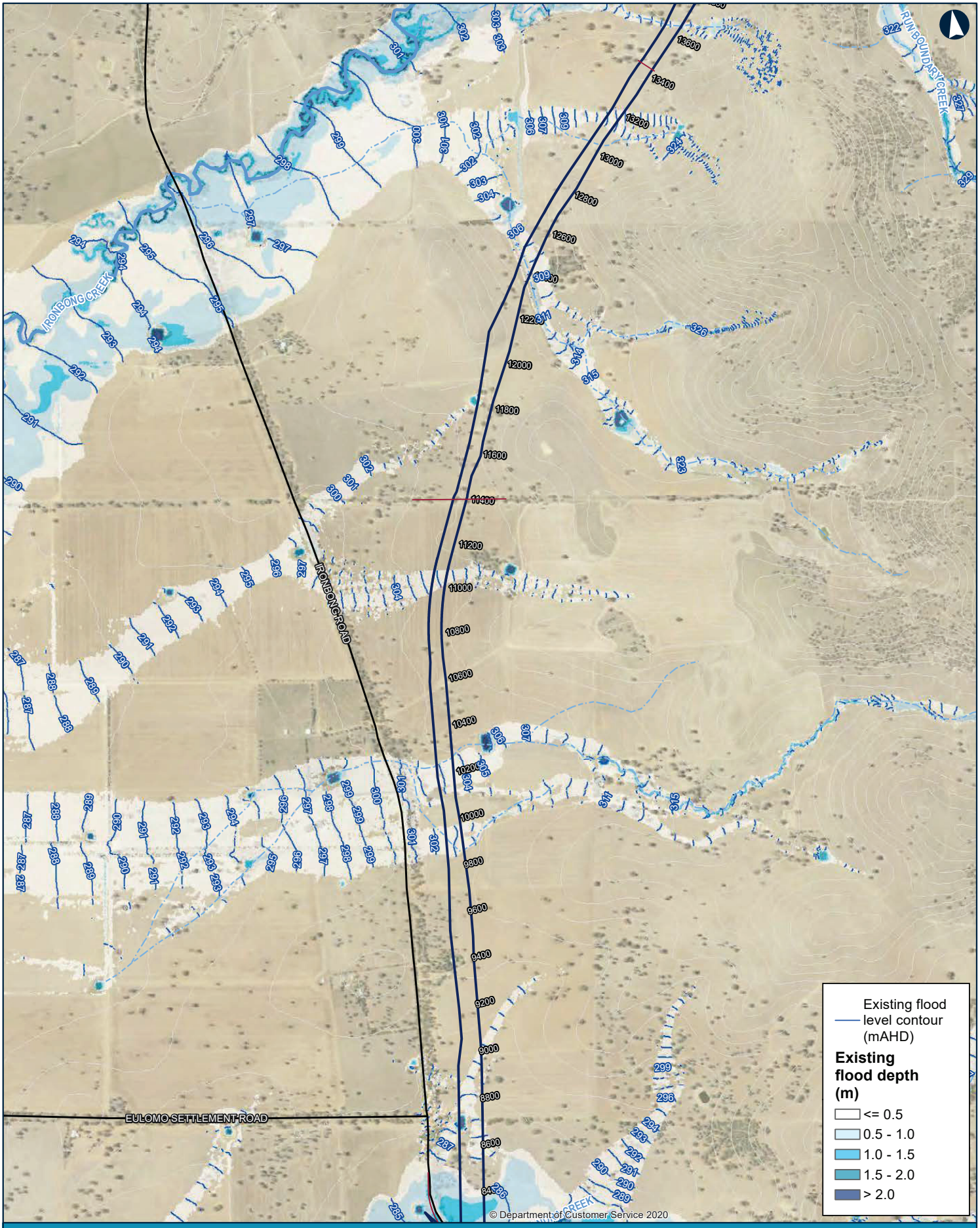
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

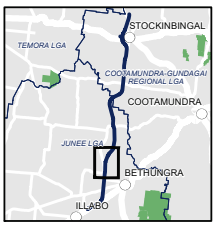
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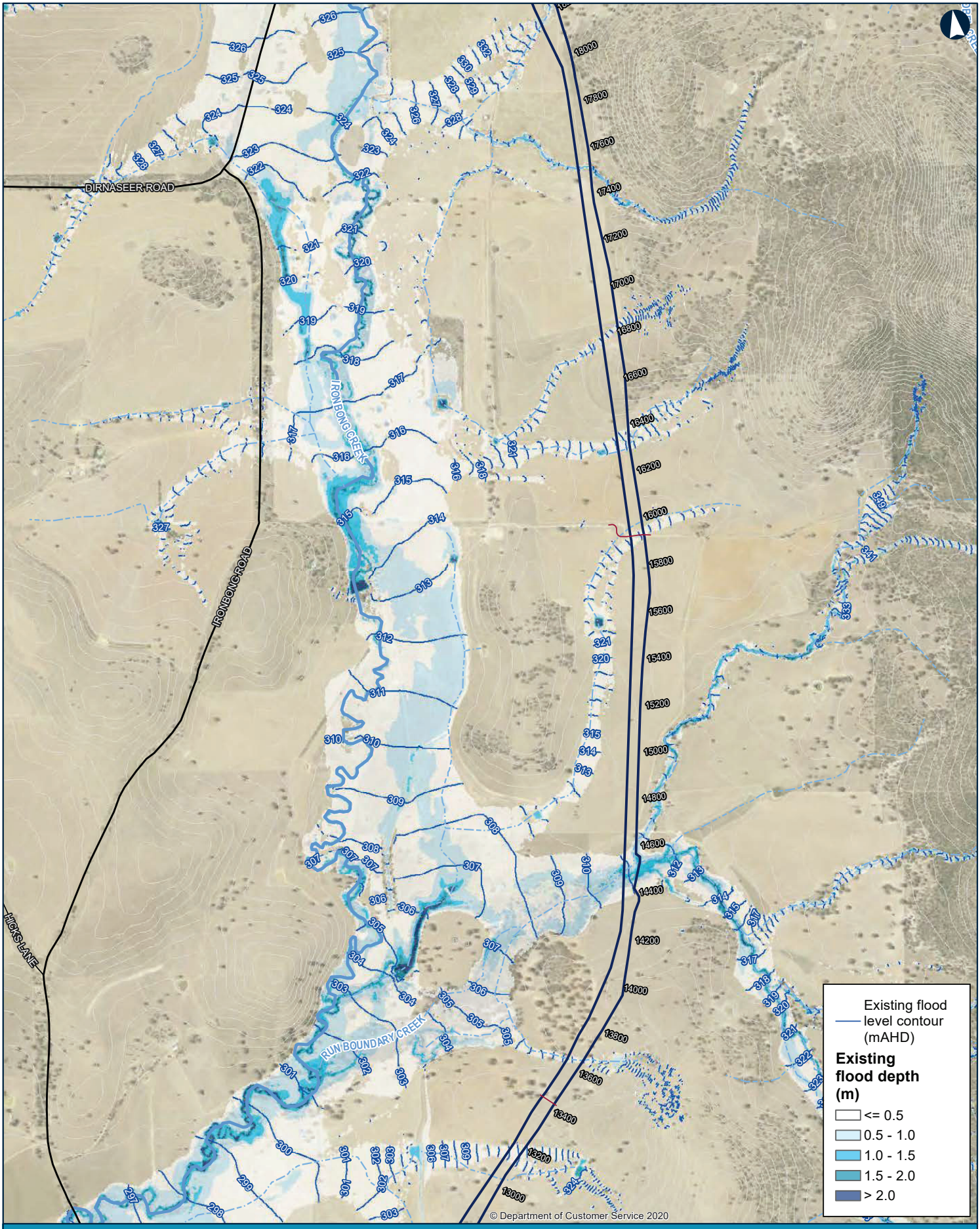
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

Map 4 of 9

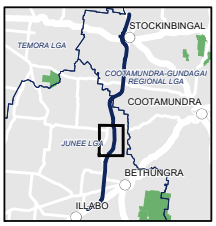
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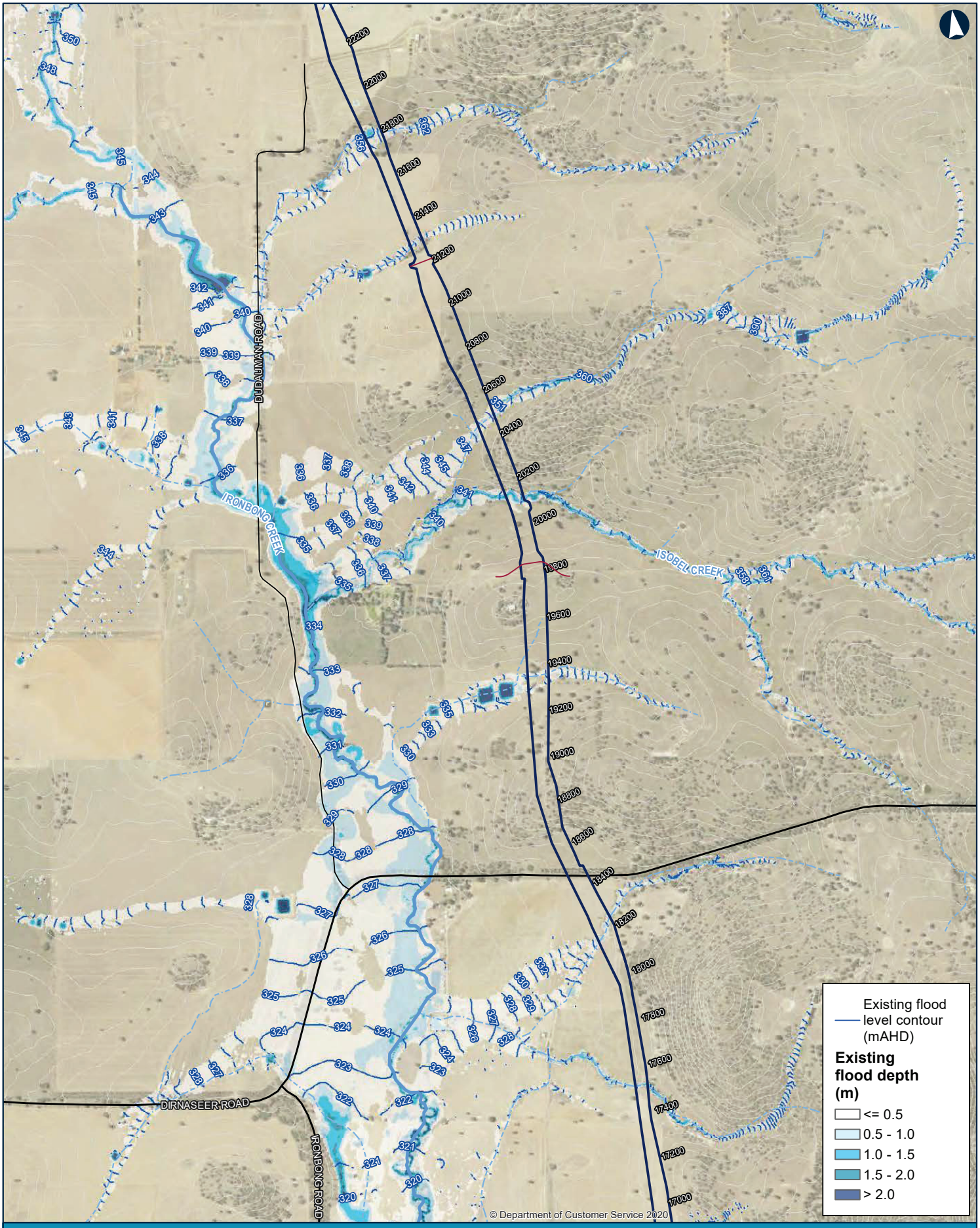
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

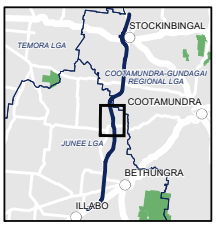
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

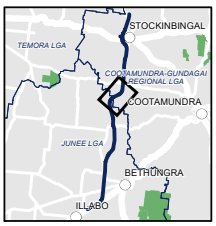
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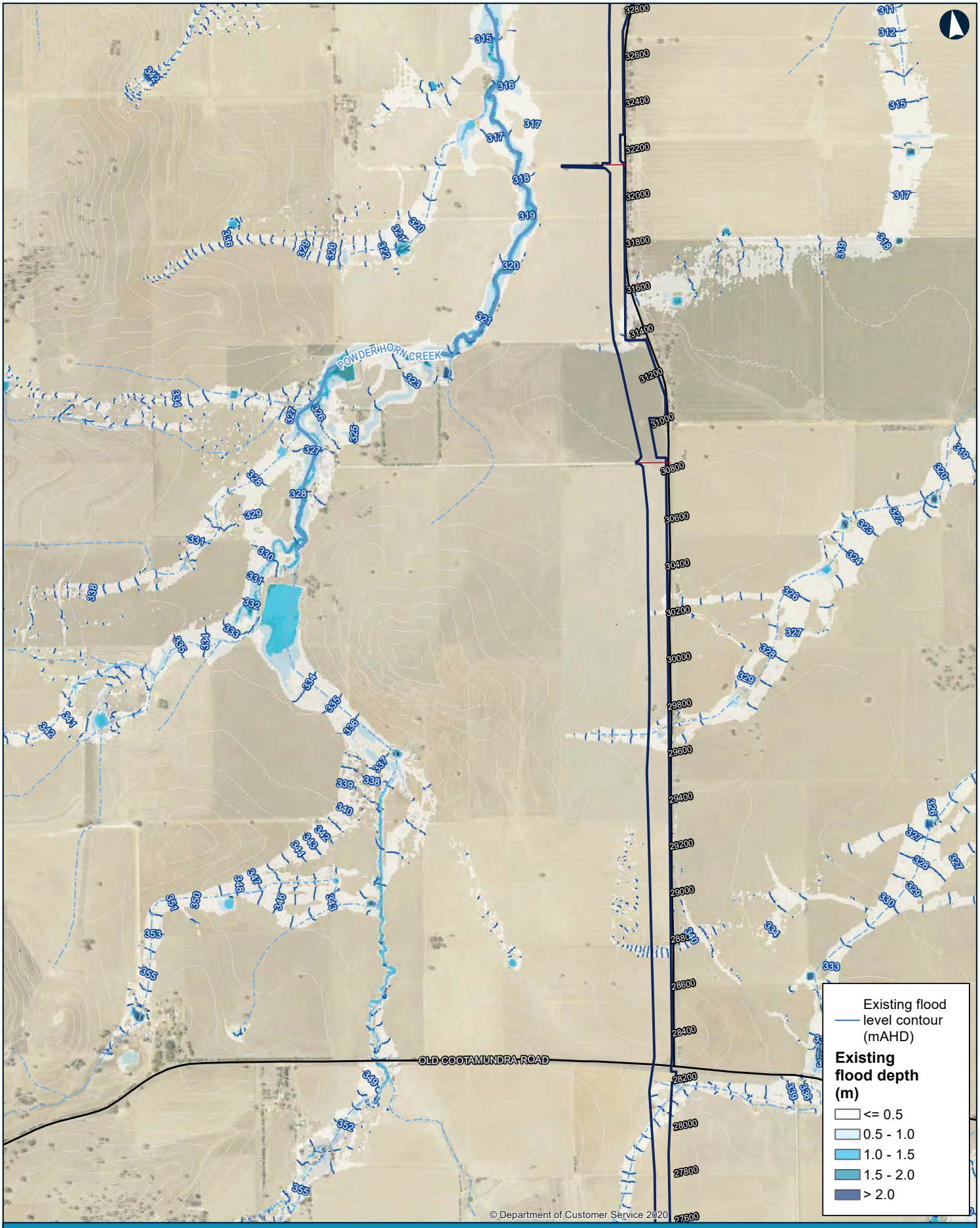
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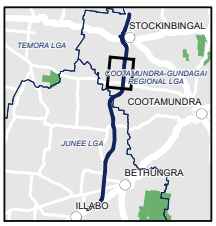
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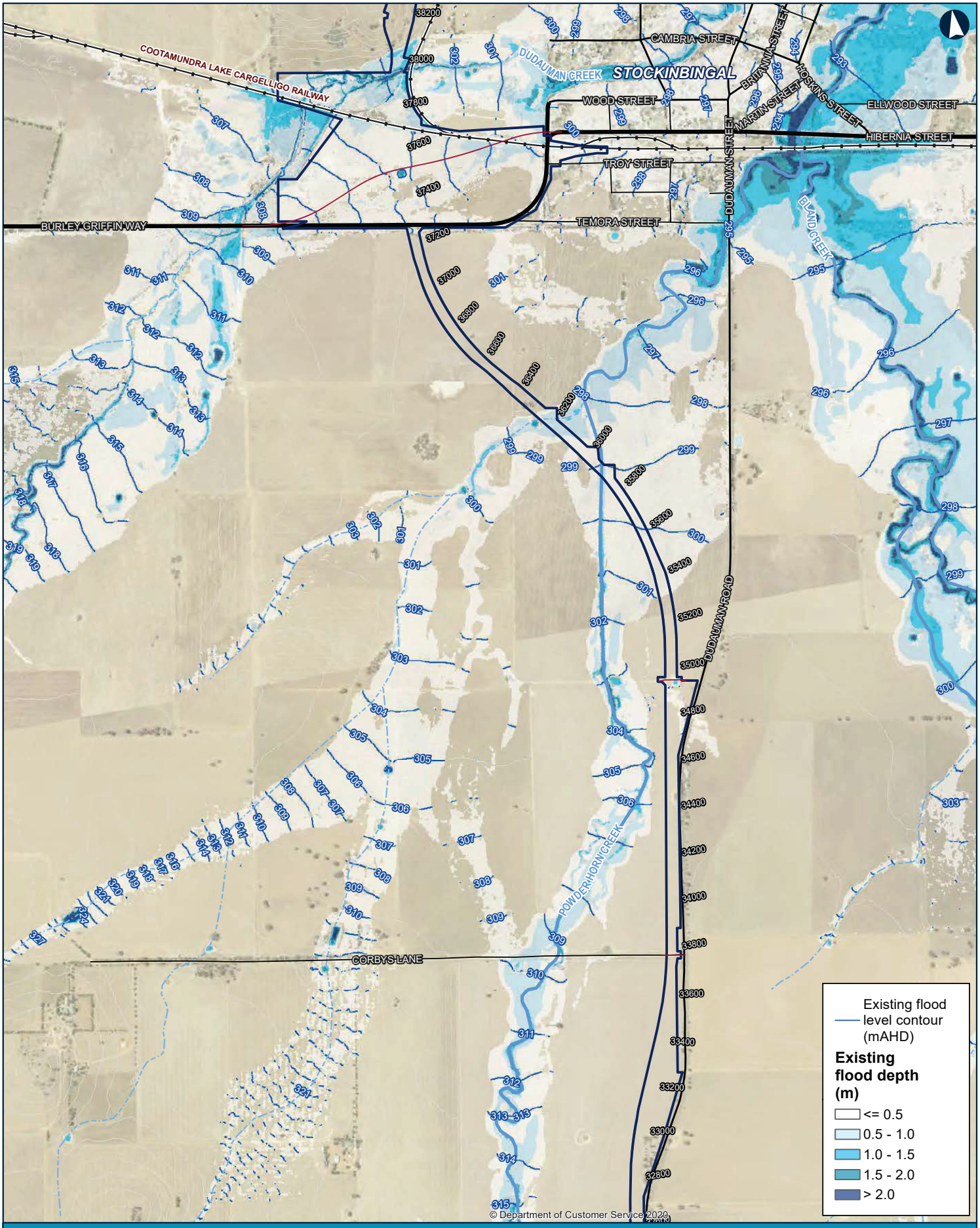
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

Map 8 of 9

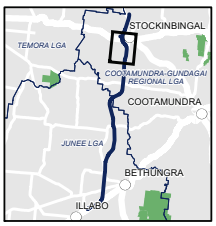
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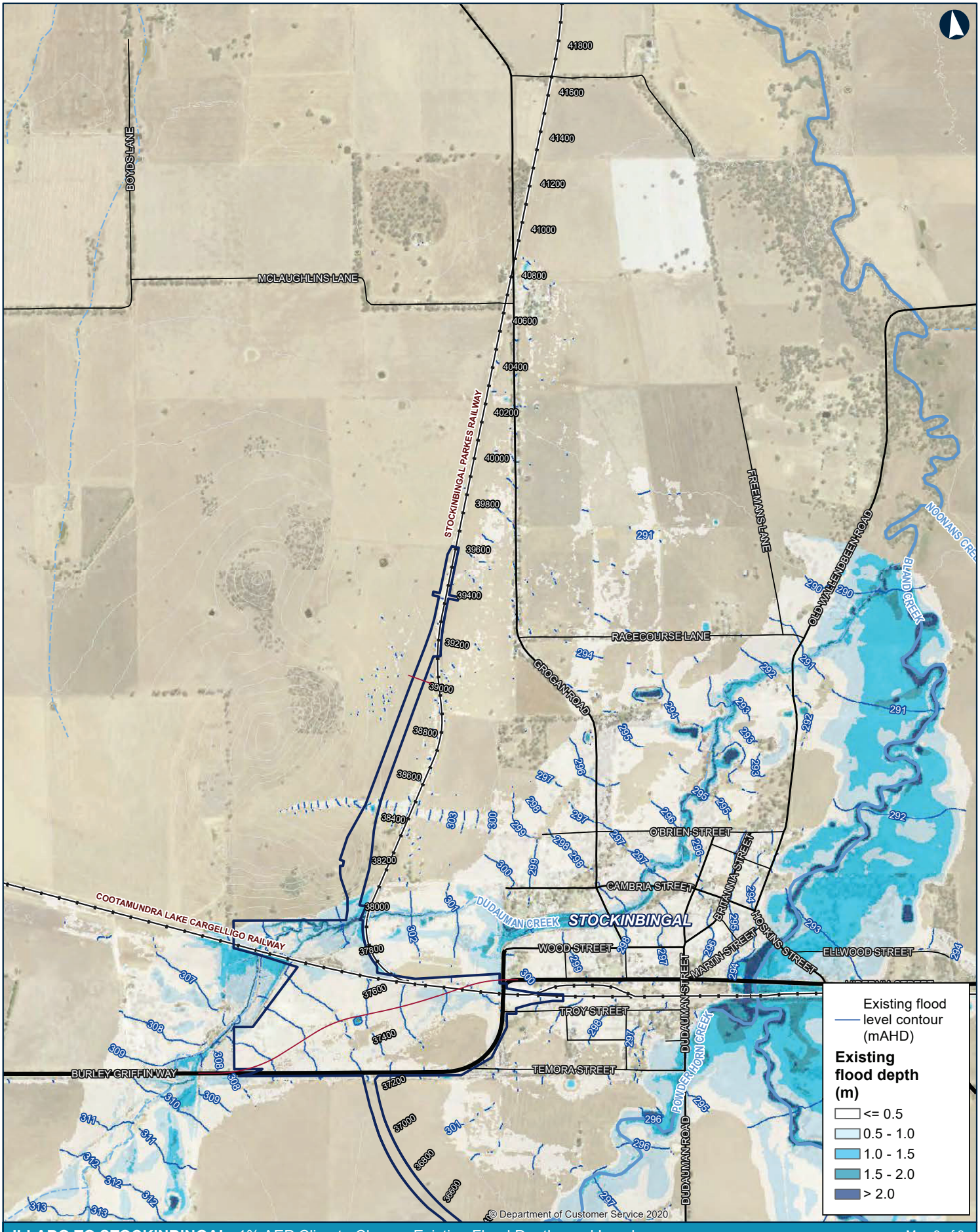
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ILLABO TO STOCKINBINGAL 1% AEP Climate Change Existing Flood Depths and Levels

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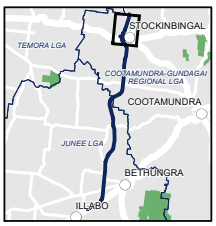
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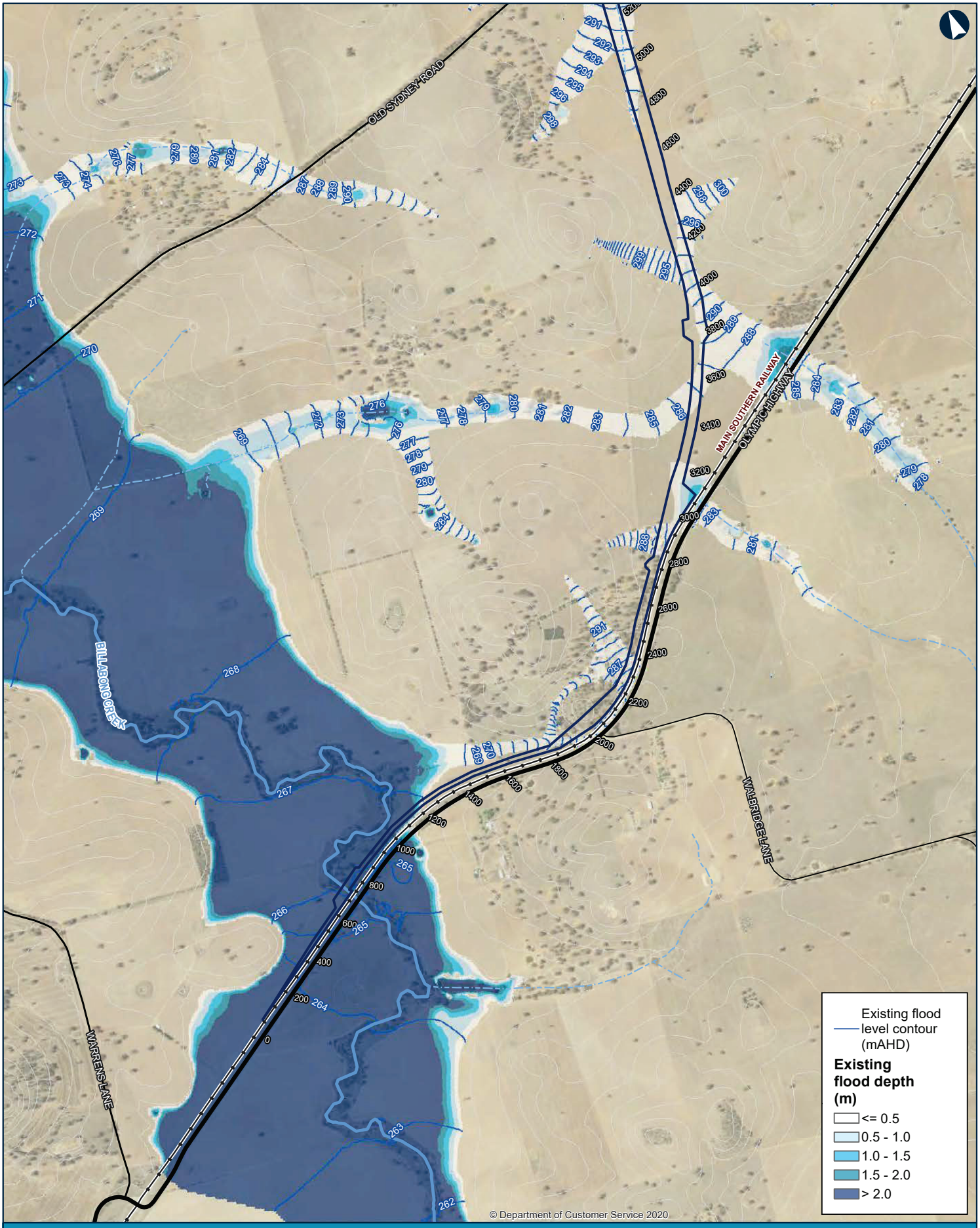
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

Map 1 of 9

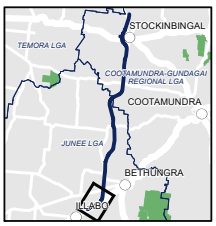
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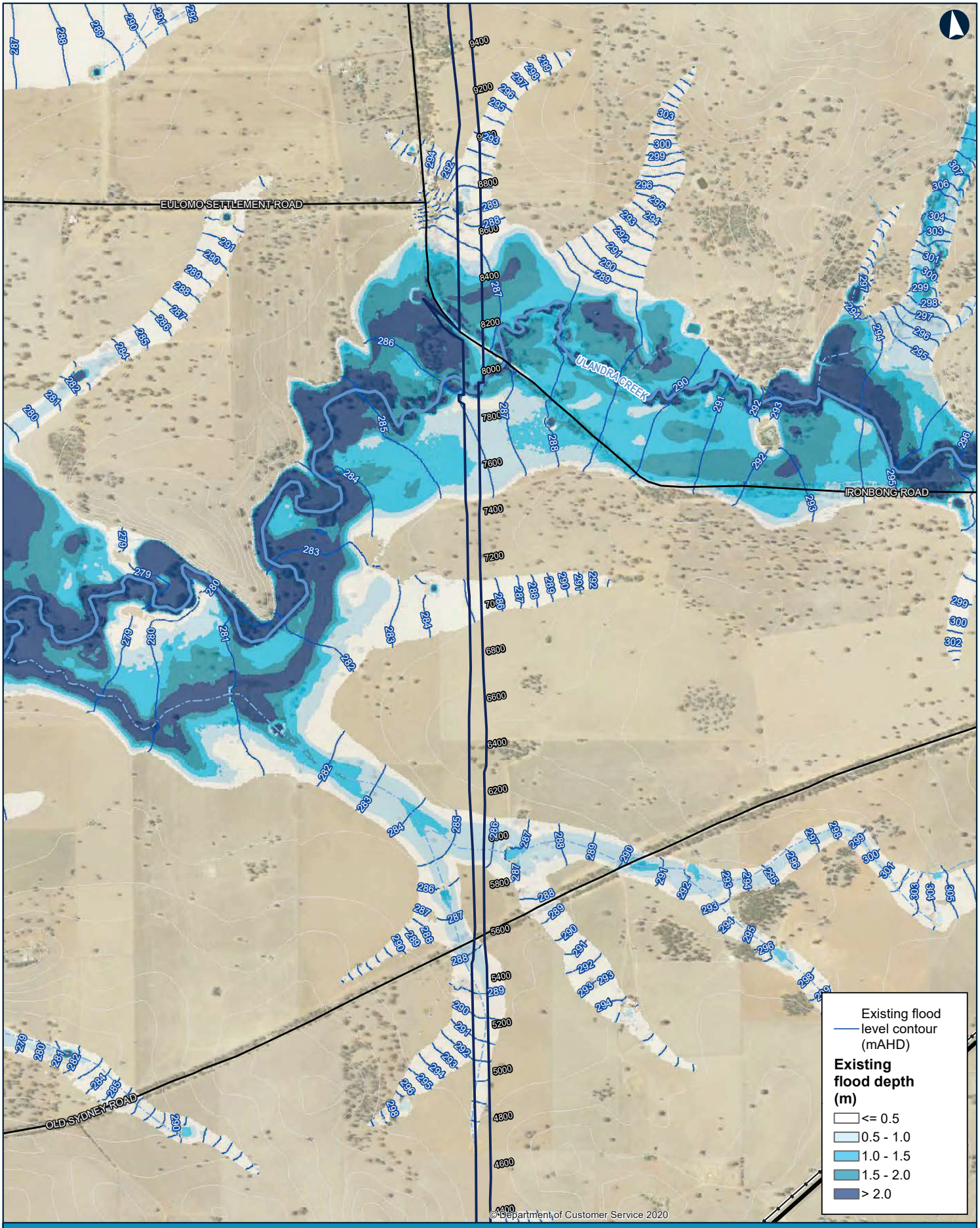
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

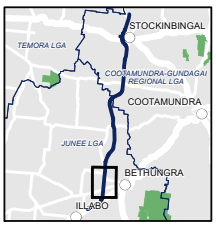
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Coordinate System: GDA 1994 MGA Zone 55

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Author: IRDJV Scale: 1:15,000
Data Sources: IRDJV, ARTC, LPI

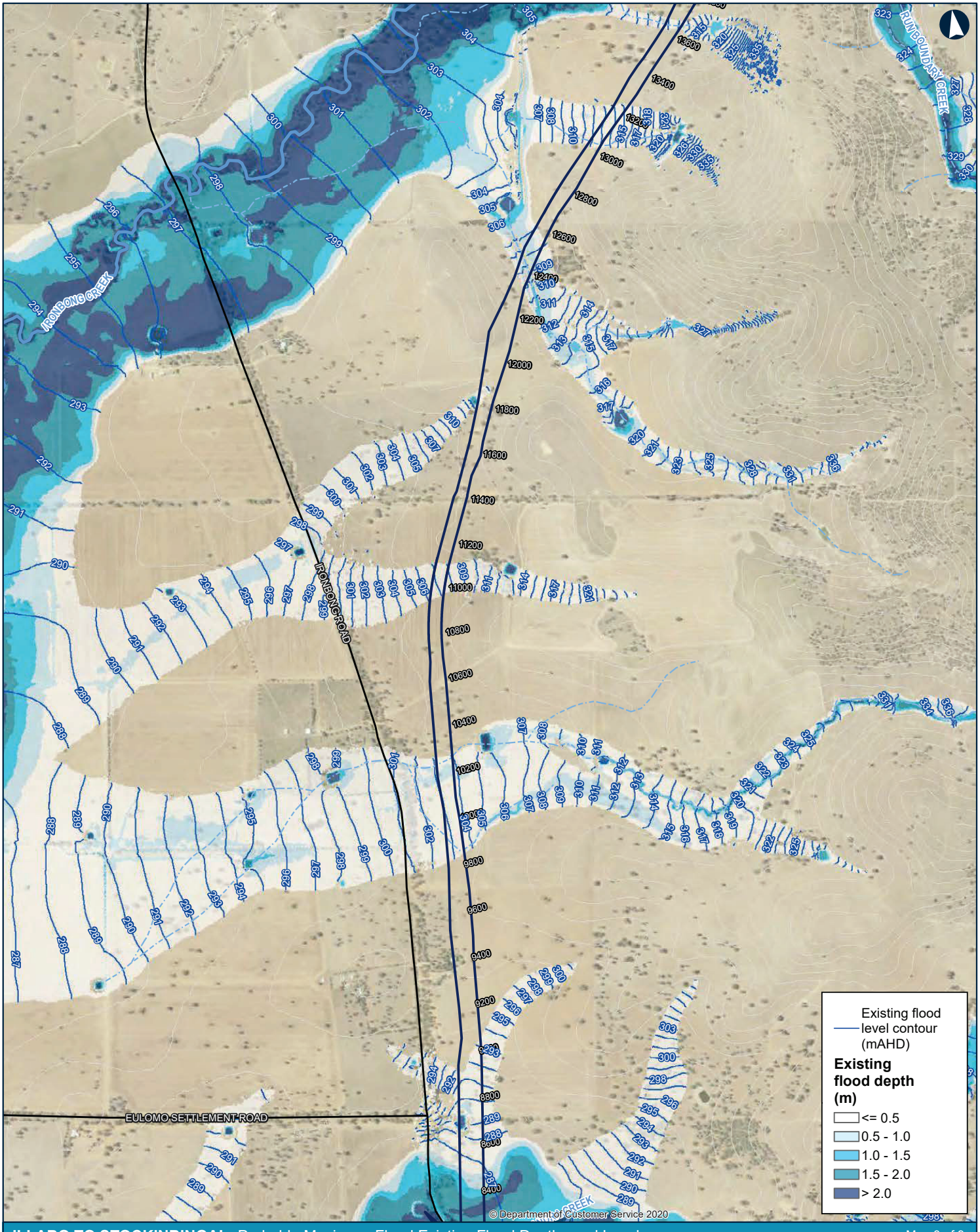
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

Map 3 of 9

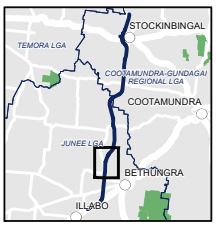
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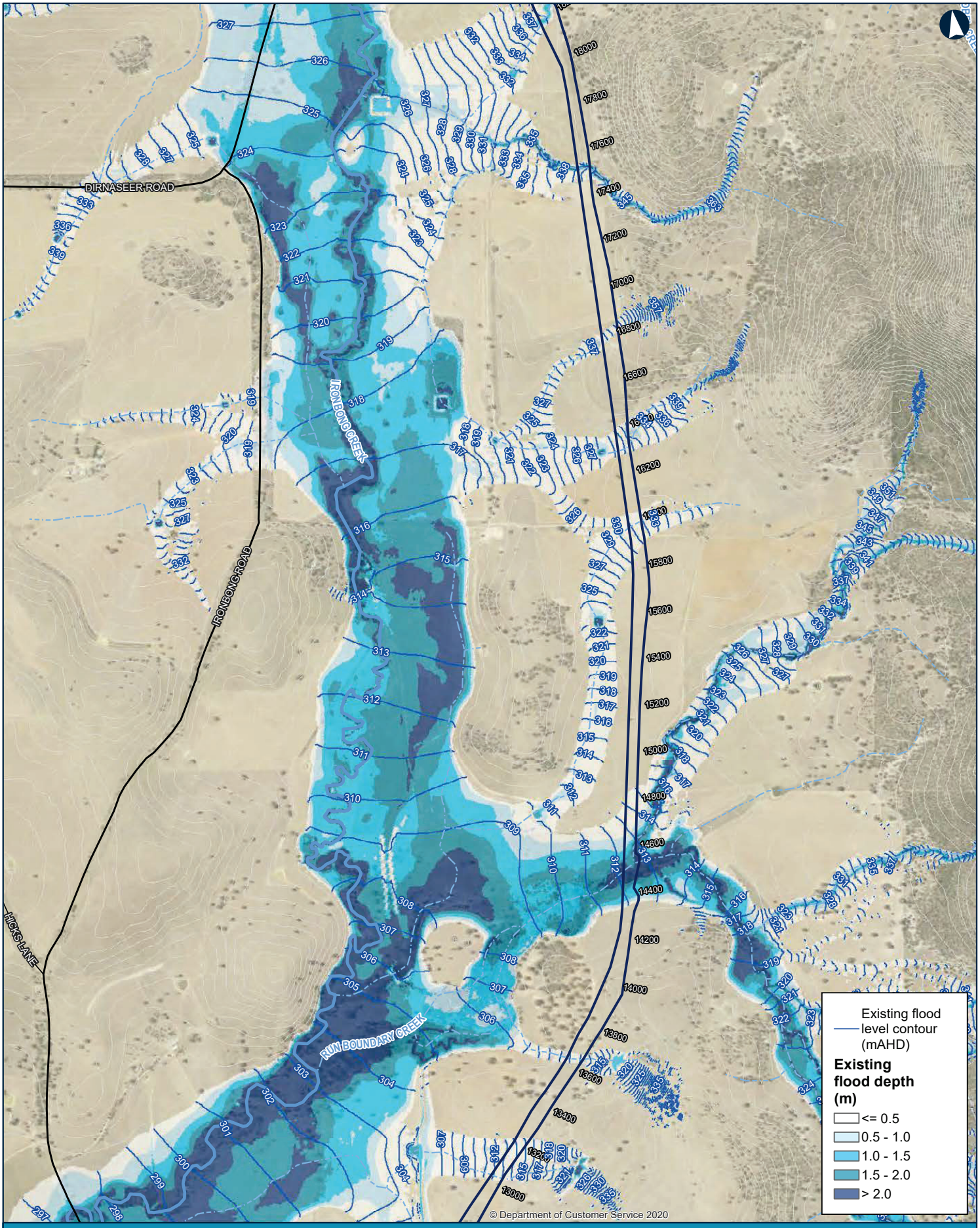
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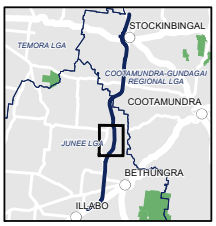
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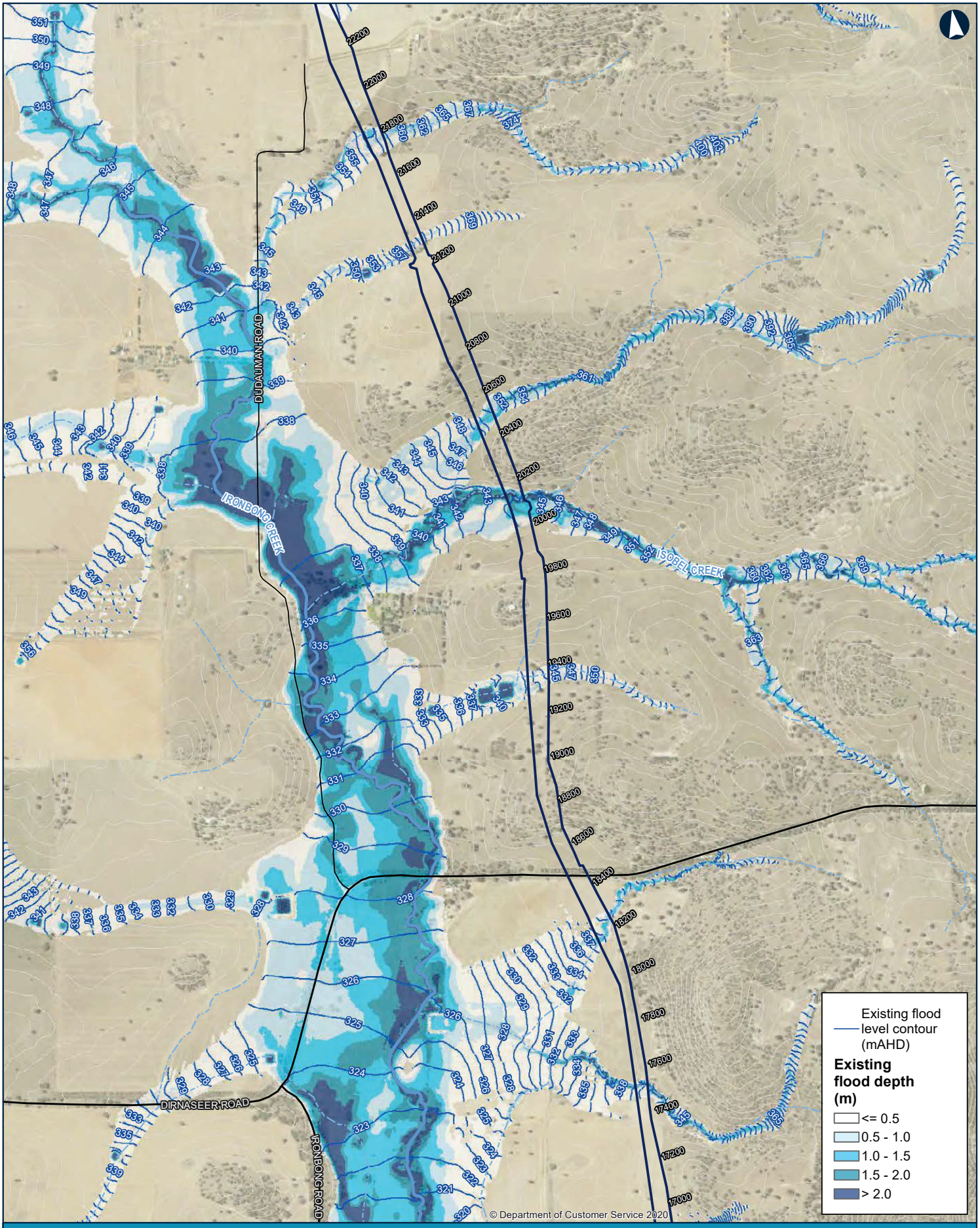
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

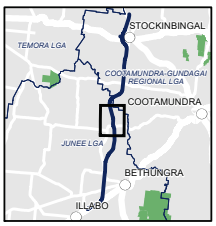
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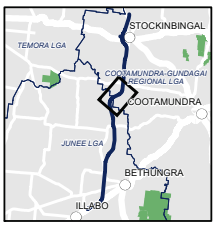
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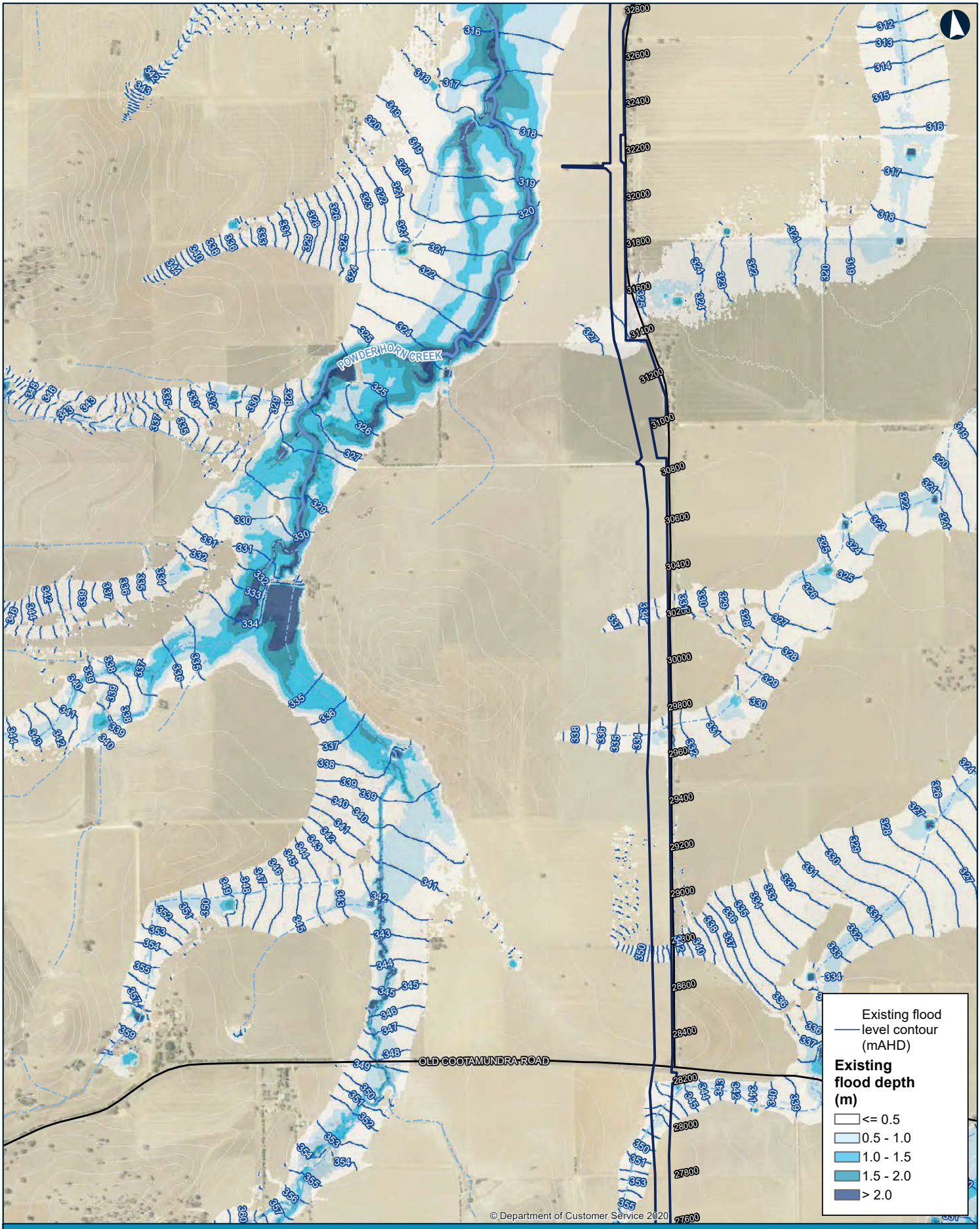
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

Map 7 of 9

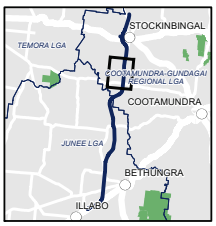
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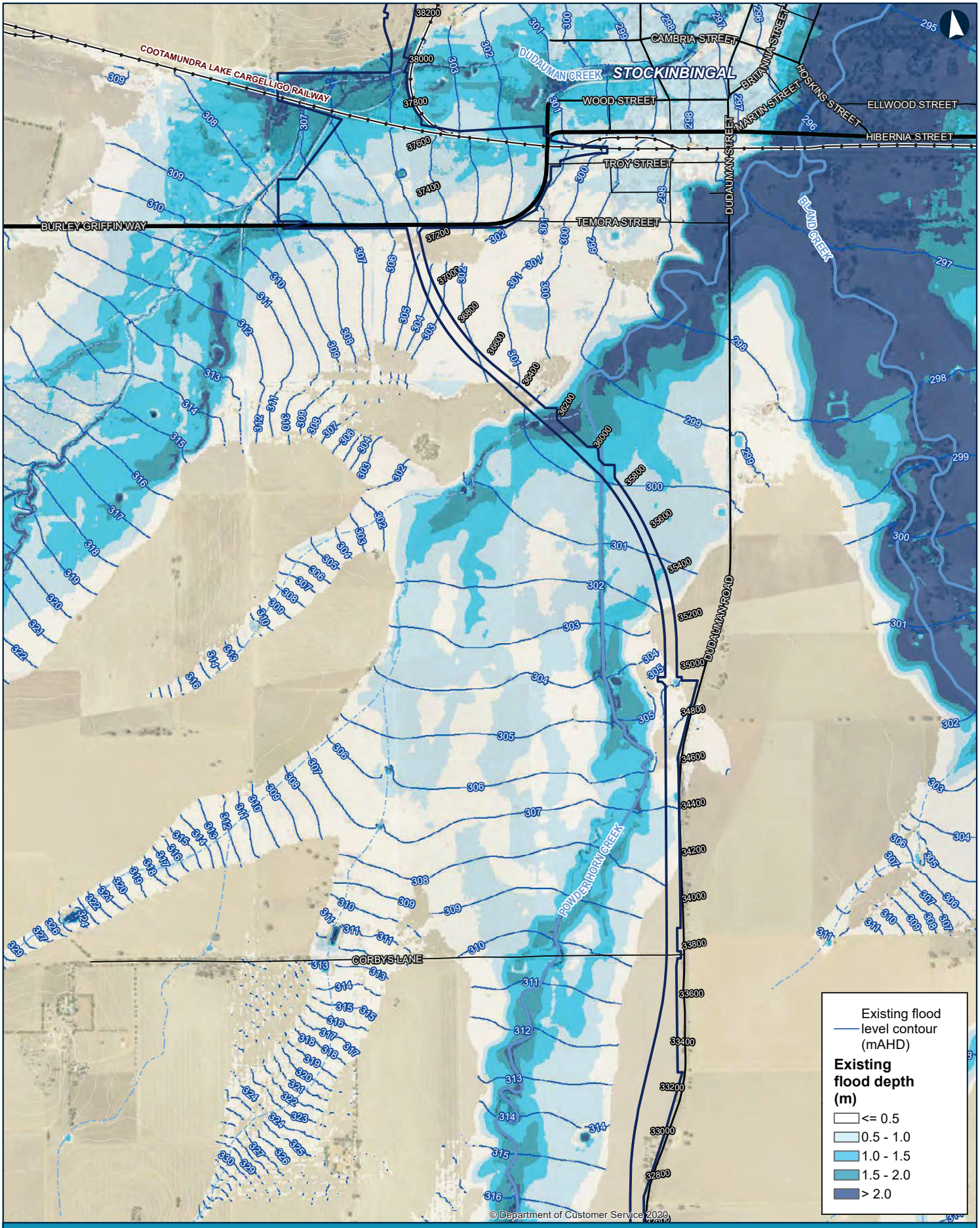
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

Map 8 of 9

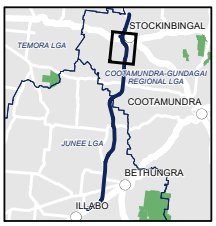
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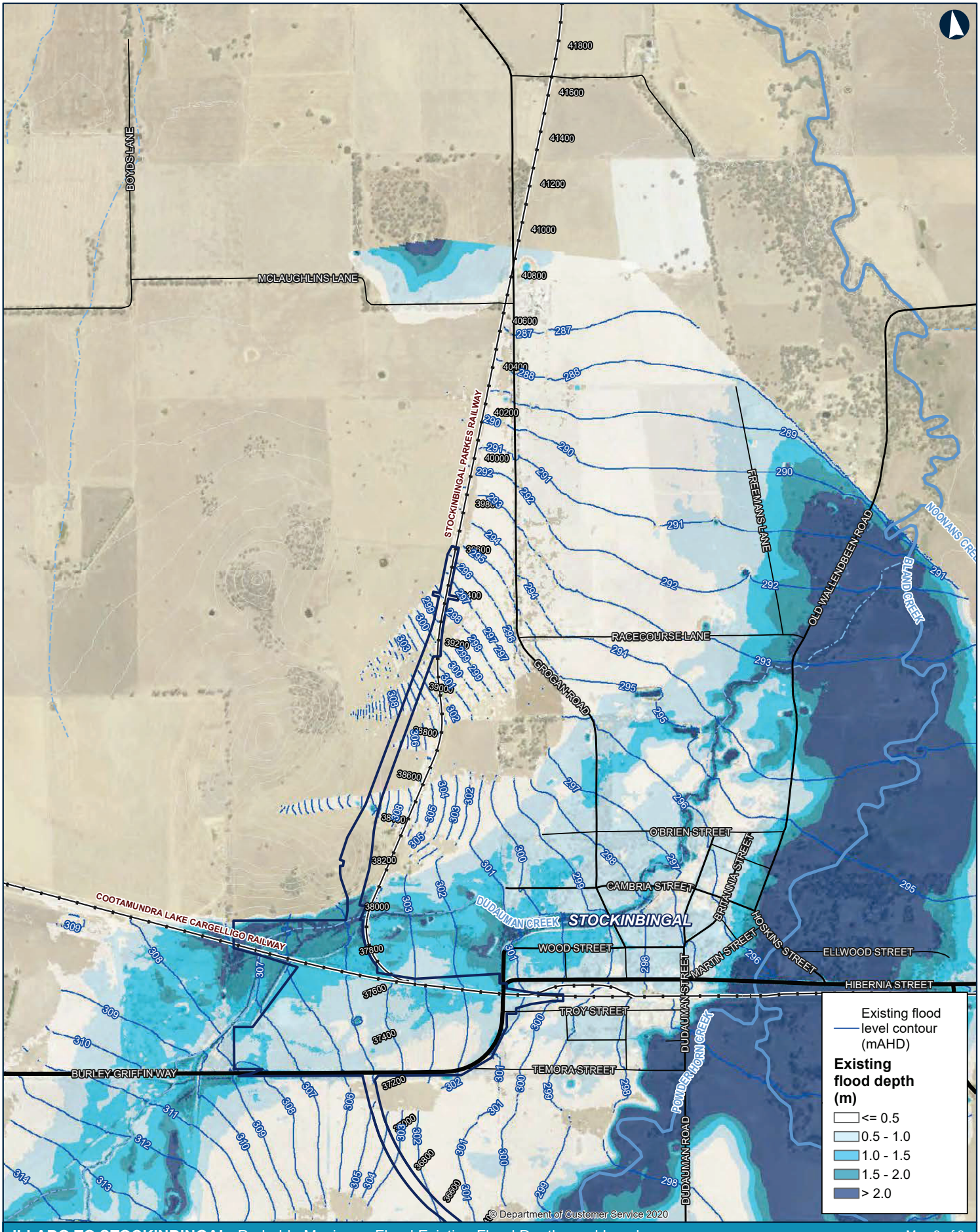
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ILLABO TO STOCKINBINGAL Probable Maximum Flood Existing Flood Depths and Levels

Map 9 of 9

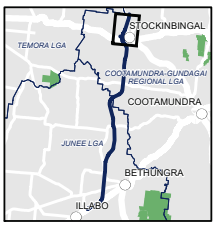
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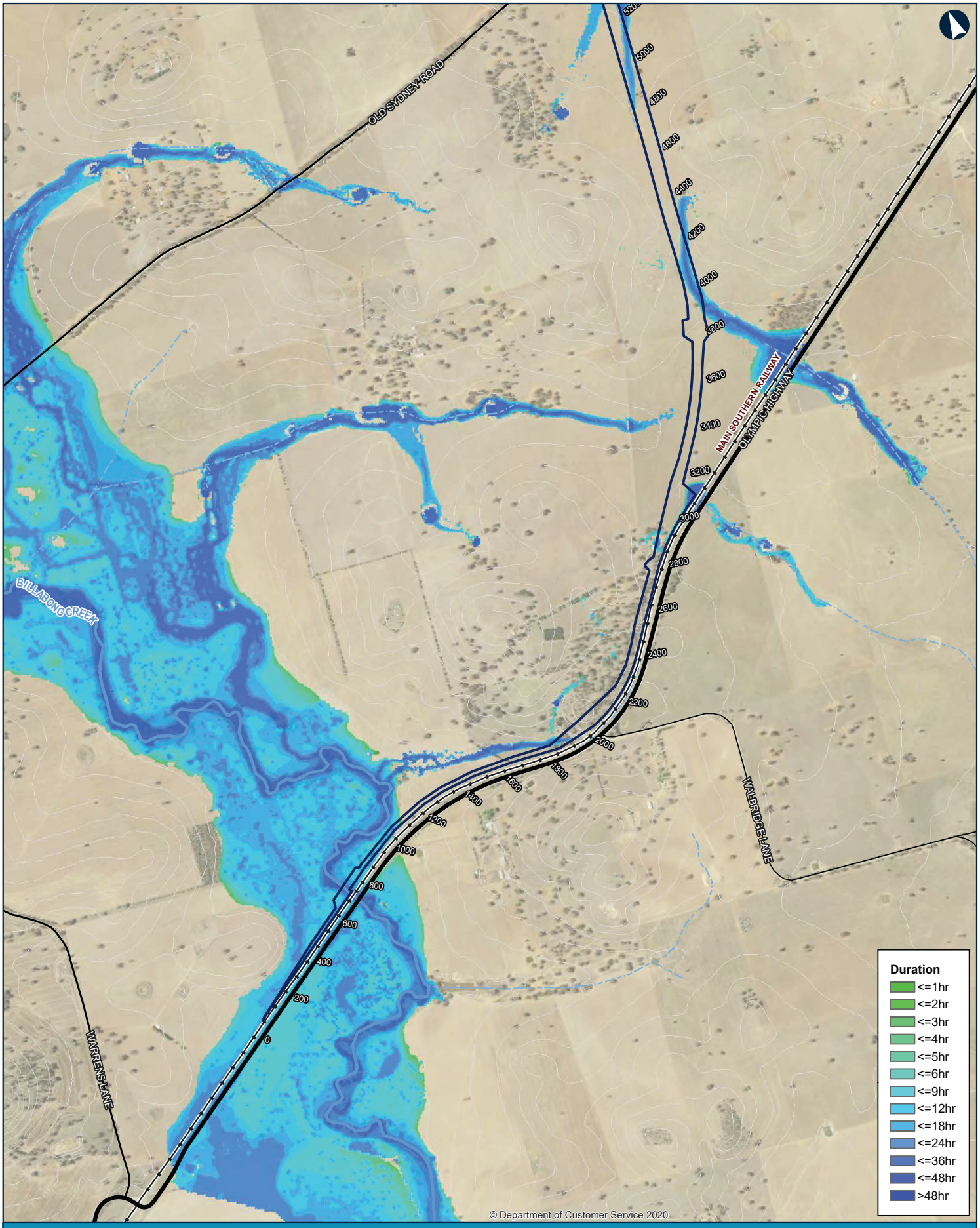
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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

Map 1 of 9

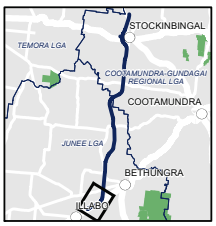
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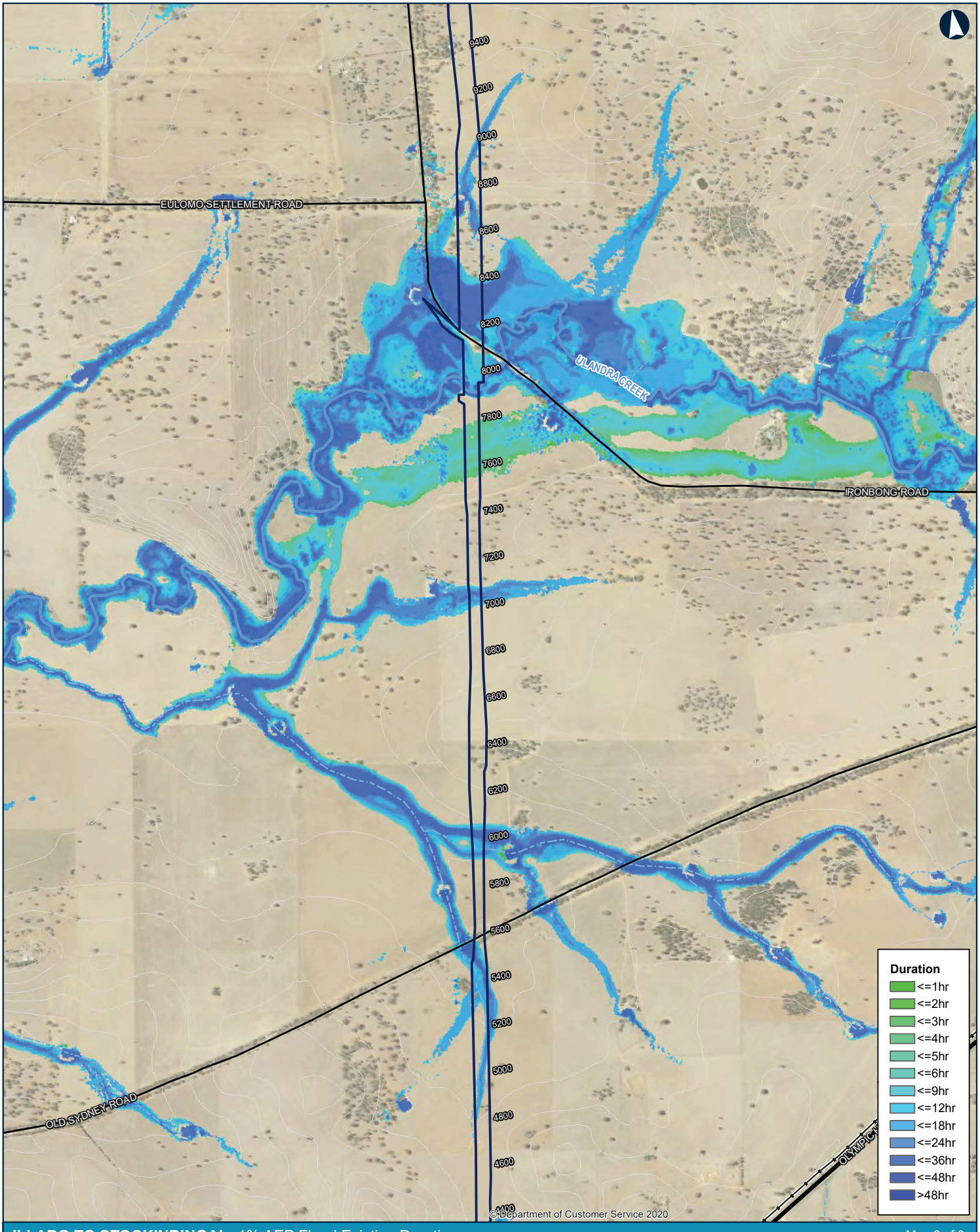
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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

Map 2 of 9

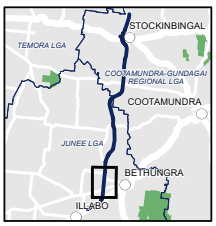
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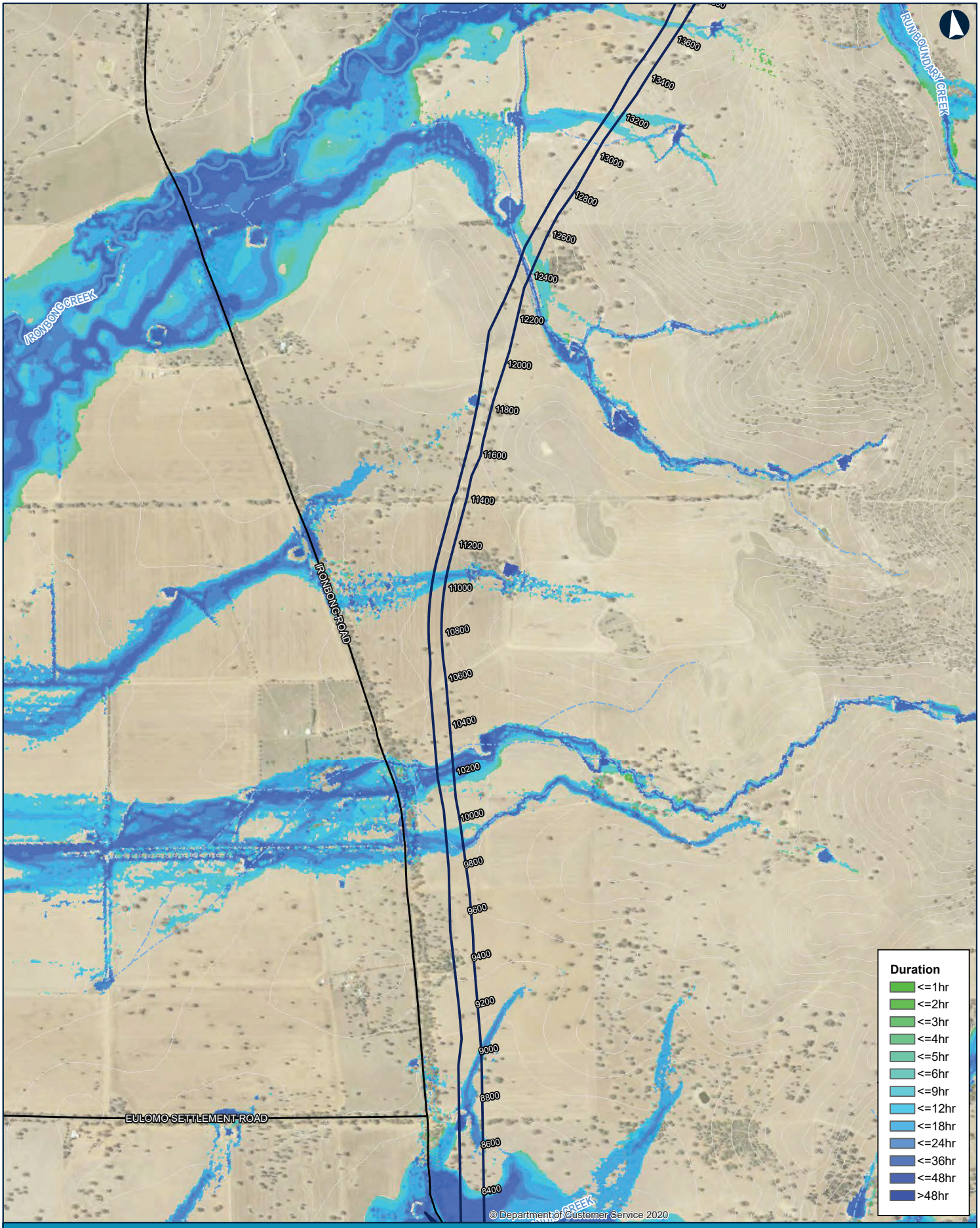
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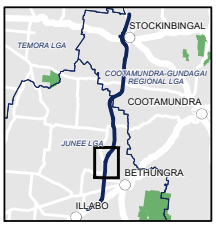
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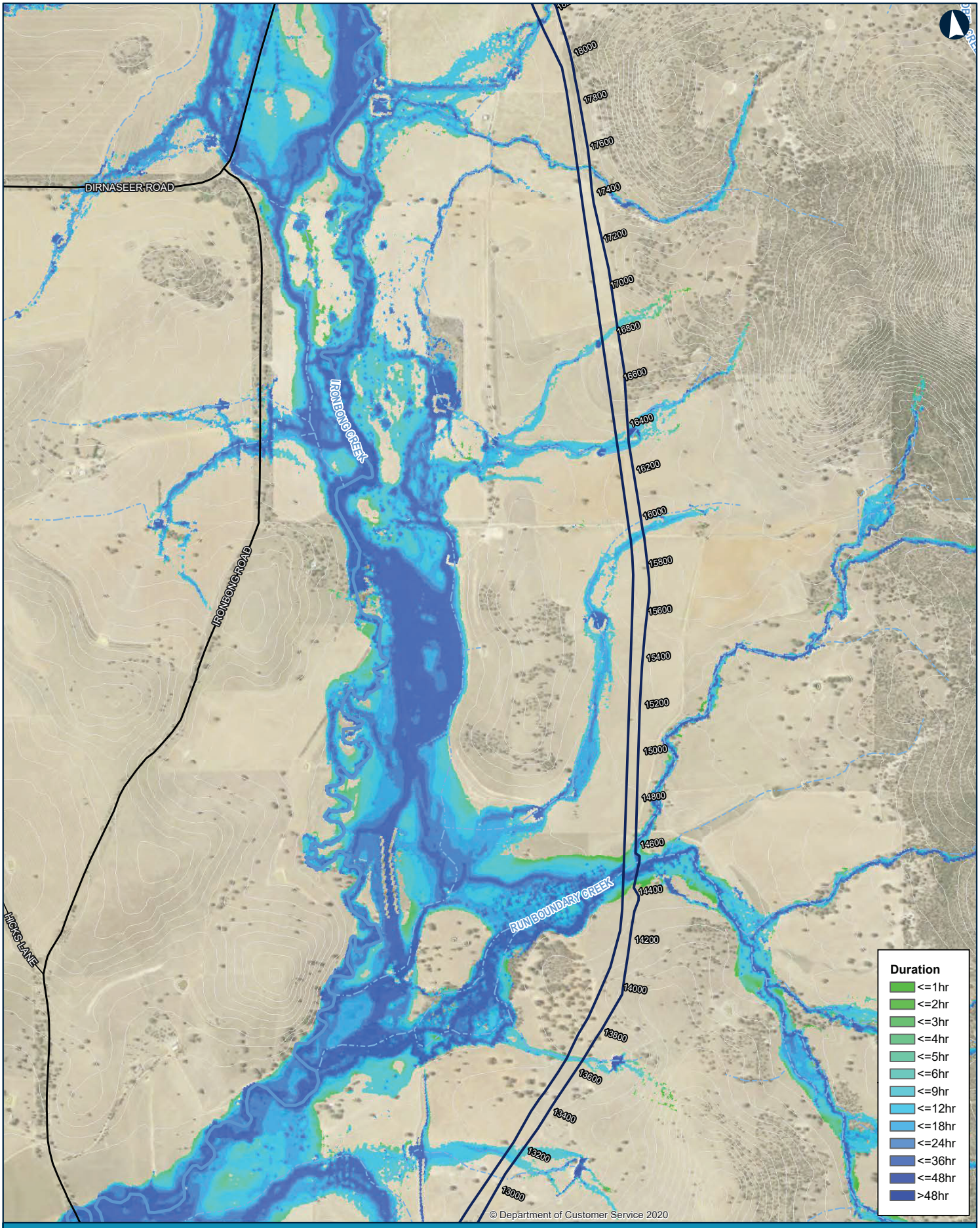
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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

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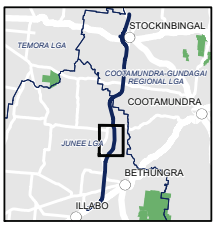
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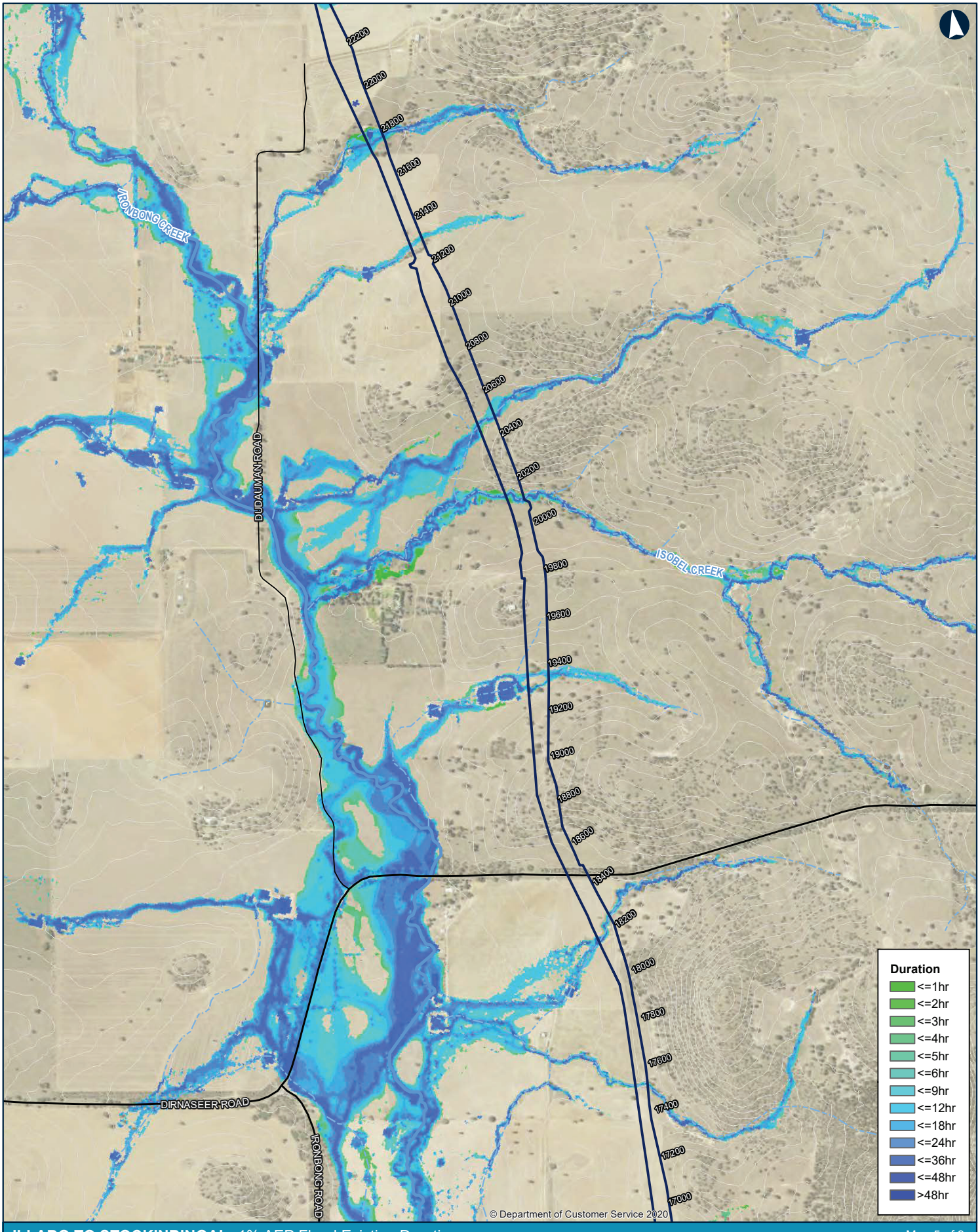
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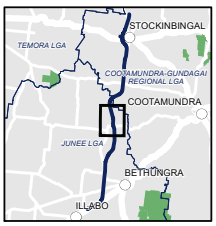
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- Arterial road



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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

Map 6 of 9

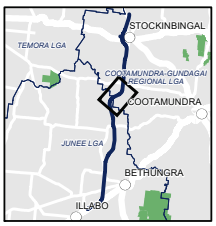
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Coordinate System: GDA 1994 MGA Zone 55

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Date: 5/10/2023 Paper: A3
Author: IRDJV Scale: 1:15,000
Data Sources: IRDJV, ARTC, LPI

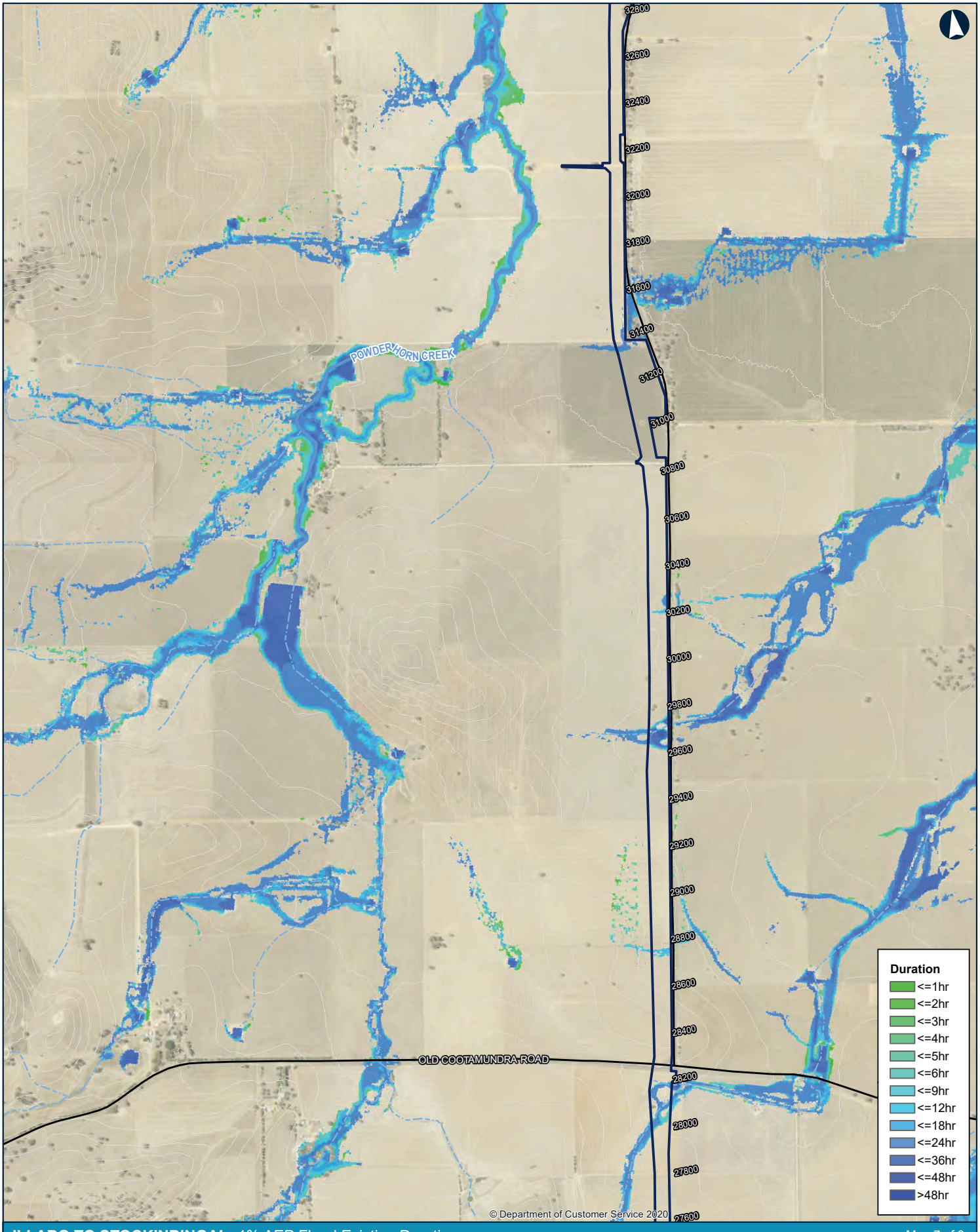
- Permanent acquisition boundary
- 40950 Chainage (distance in metres from southern limit of the proposal)
- 5m Contours
- Existing rail
- Minor watercourse (Strahler SO 1-3)
- Major watercourse (Strahler SO 4-6)
- Local road
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- Arterial road



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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

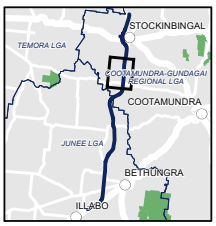
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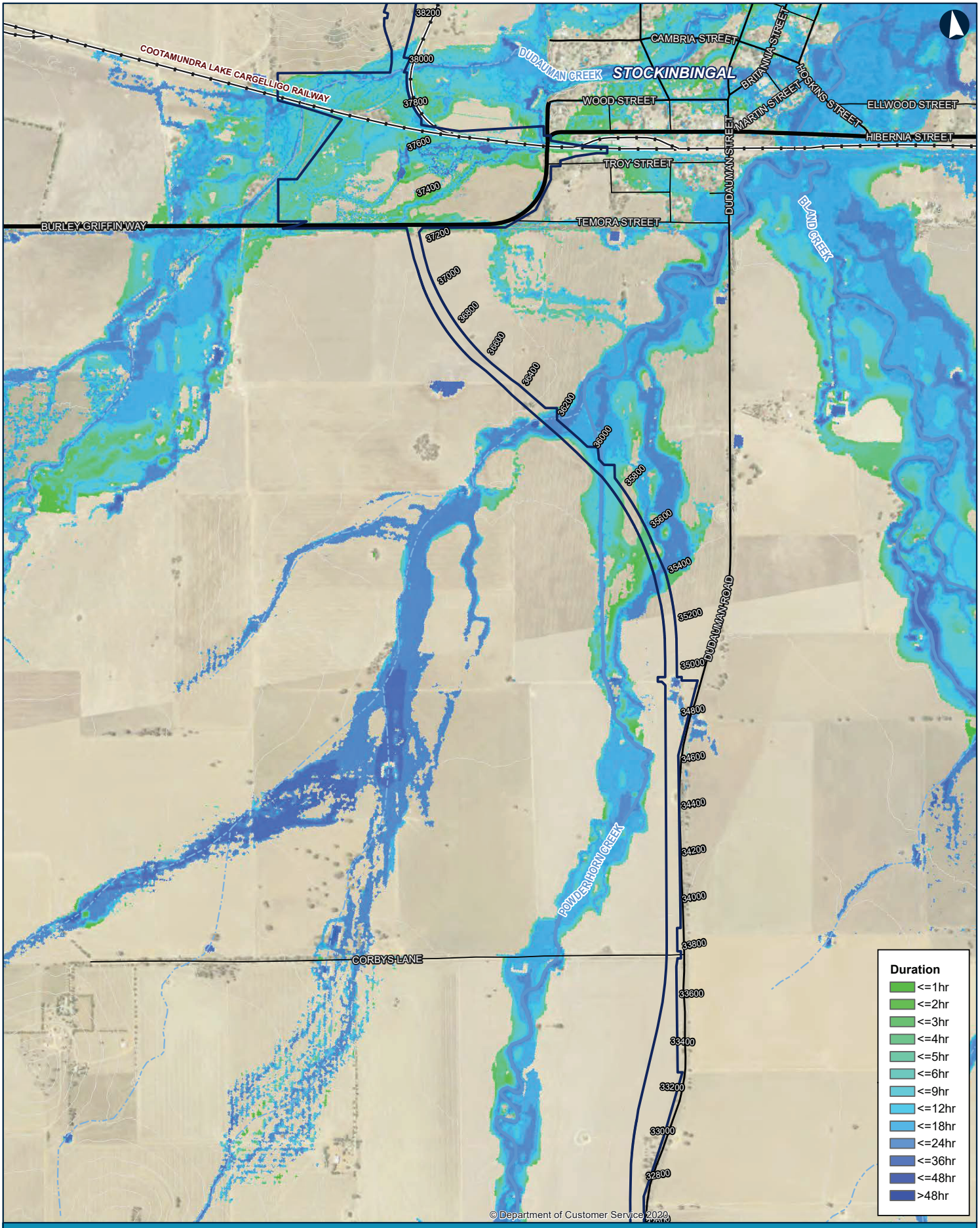
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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

Map 8 of 9

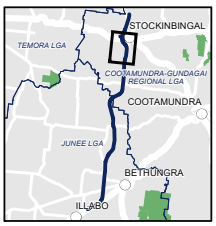
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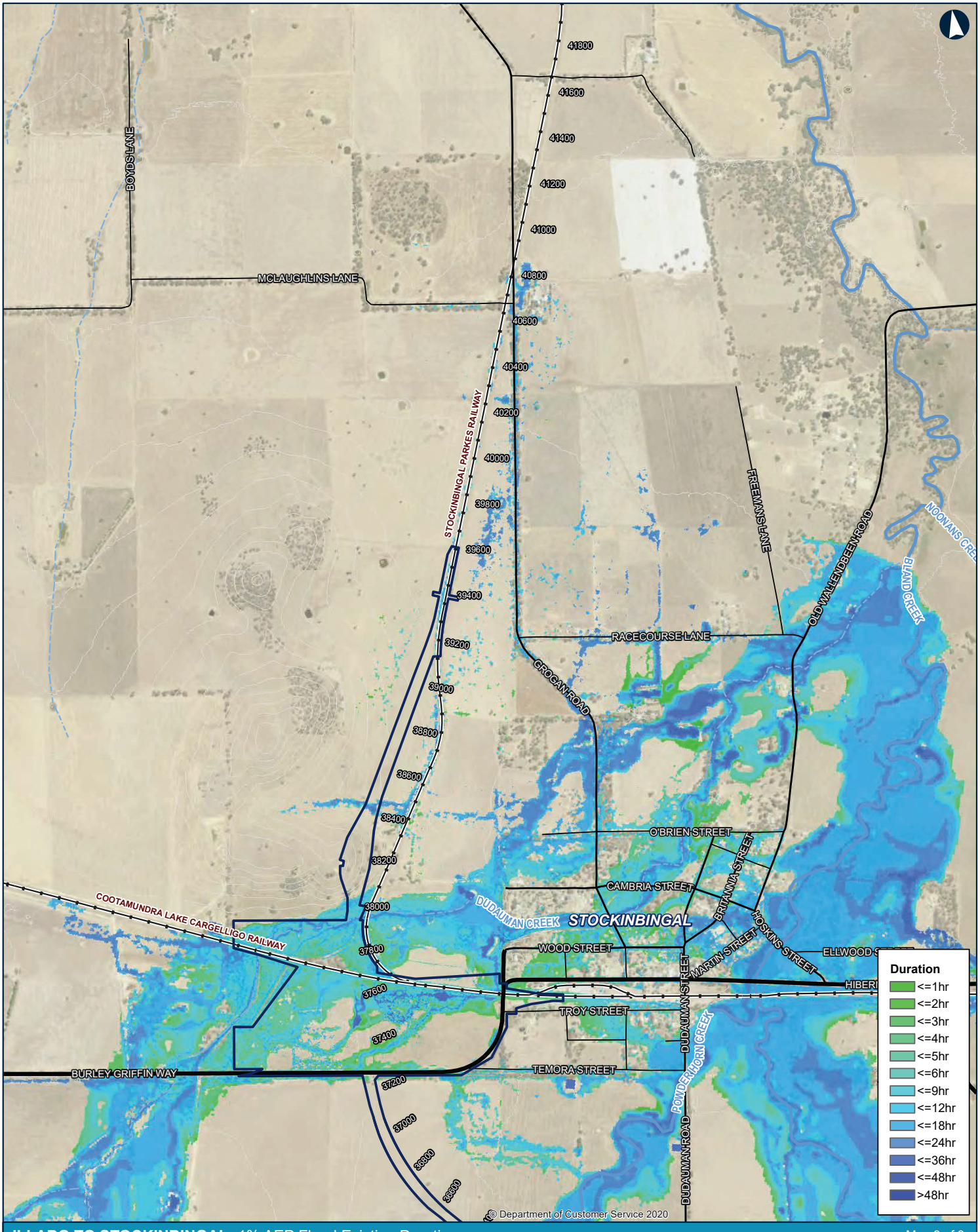
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ILLABO TO STOCKINBINGAL 1% AEP Flood Existing Duration

Map 9 of 9

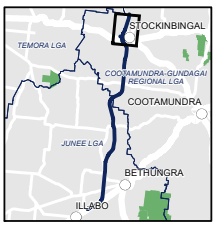
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Appendix B Site Specific Flood Preparation Plan (TEMPLATE)

Site Name: Area/Chainage:

Drafted by (Area Supervisor): Date:

Approved by (Area Engineer): Instructions: This Site-Specific Flood Preparation Plan is to be prepared prior to the mobilisation to site and triggered following a Flood Warning or Flood Watch alert issued by BOM.

Site Layout Diagram ***(Insert)*** NOTE: This Site Layout Diagram must include key site features, temporary works, access routes, onsite flood refuge (elevated) ground, drainage features, etc		
Flood Evacuation Route		
Key Personnel / Response Crew *(Insert)*	**Name:**	**Phone Numbers:**

Site Preparation Checklist

Task	Completed
Undertake actions in consultation with the Project Manager – environmental, safety risk assessment / WMS?	
Check perimeter of all building structures for any loose items that need to be secured.	
Isolate dams/water catchments where possible – battering/windrowing	
Secure/remove pumping station where possible – high ground designated area	
Empty and secure effluent tanks to ensure no leakages?	
Move plant/machinery or other equipment to designated 'high ground' areas and secure. Photograph for records.	
Stored fire extinguishers inside buildings?	
Empty rubbish bins and store inside storage/shipping containers?	
Secure all windows on huts on sites?	
Close all air conditioner vents and tie down condensers?	
Empty fridges of all perishable goods?	
Close all internal doors?	
Clear and tidy all office desks?	
Cover all records, drawings and documents etc. in plastic (watertight)?	
Turn off and cover (or remove from site) all computers and hardware?	
Monitor phone and fax until site evacuation?	
Close and lock all external doors?	
Turn off all electrical equipment?	
Secure or store all loose items in office areas and laydown areas?	
Secure gas cylinders, oil and fuel drums?	

Raise materials and equipment that are vulnerable to water damage from the floor?	
Isolate, secure and store all fuel dispensing equipment?	
Bundle and secure all loose debris?	
Secure or remove signs and star pickets?	
Check all ties on buildings and objects?	
Check of high ground that is considered appropriate for holding machinery/material/hazardous substances/chemicals & other equipment in the event of flooding on the worksite – identified on site prior to commencement of works (environmental risk assessment)?	
Remove temporary traffic control devices where possible e.g. traffic cones?	
Ensure clear drainage paths on sites – to accommodate heavy rainfall?	
Monitor and maintain ESC devices?	
Establish stable access/egress points – gravel/rock?	
Separation of dirty and clean water catchments where possible?	
Cover road areas with gravel & seal wherever possible?	
Tasking – team inspections to designated areas for inspection of ESC devices/batters/verges – includes photographs of same – recorded data?	
Site Specific Actions / Measures (Insert) – Incl. Temporary Works Response Measures	
1.	
2.	
3.	
4.	
5.	
6.	

Appendix C Post Severe Weather / Flood Survey (TEMPLATE)

Name: Date:

Position: Site:

Instruction: Please complete the following questions and return to your Supervisor, Area Manager or Project Manager. The answers (and any feedback provided) will assist in the review and improvement of the Illabo to Stockinbingal FEMP.

Note: Please indicate N/A if a question does not relate to you.

1. Had you previously read and understood the Flood Emergency Management Plan or Site-Specific Flood Preparation Plan? **(Y /N)**

2. Did you highlight any questions about the plan to your supervisor prior to the severe weather or flood event? **(Y / N)**

3. What was the outcome of your questions?

4. Were you given updates on the status of the severe weather / flood event before and during the event? **(Y / N)**

5. If so, by whom?

6. Were you given adequate time to carry out your duties in preparation for the severe weather / flood event?

7. How did sub-Contractors cooperate with Contractor's instructions?

8. Were you given adequate time to take care of your family and home prior to the severe weather / flood event (if applicable)?

9. How effective was the communication in relation to severe weather or flood management / evacuation

management process?

10. Did procedures provide minimal disruption prior to and during the severe weather / flood event?

11. What are your suggestions on improving the Flood Emergency Management Plan, the Site Specific Flood Preparation Plan and associated procedures?

12. What processes or innovations do you consider may be appropriate to assist in making this plan more effective and efficient?

13. Were you a member of the Response Crew established for the site?

14. Any other suggestions or comments?

Appendix D Consultation Records

CPHR - Regional Delivery

Date	Details of Engagement / Attempted Engagement
6/06/2025	Draft Flood Emergency Response Plan (FEMP) submitted via email for review and comment
23/06/2025	Comments provided on Draft FEMP via email by CPHR Regional Delivery team.
17/07/2025	Email with updated FEMP provided to CPHR team to confirm all comments have been addressed and considered closed.
30/07/2025	Email from CPHR to JHG with confirmation on all comments closed with exception to two outstanding items associated with flowcharts requested for inclusion as part of the emergency response and incorporation of each element into the Plan.
31/07/2025	Submission of a flow chart by JHG via email to CPHR to close out the remaining comments.
1/08/2025	Email from CPHR with confirmation that the flowchart addressed one comment but requested one more to complete the overview of the emergency response elements in table 9-1.
4/08/2025	JHG provision of a flowchart via email to describe the process for emergency response as per Table 9-1 of the FEMP.
4/08/2025	Confirmation by CPHR via email that all comments now closed (subject to confirmation of acceptance by the SES team that the flowcharts are acceptable).
5/08/2025	Request made via email to SES team (with CPHR cc'd into correspondence) to confirm that the flowcharts were acceptable from the emergency services perspective (noting that these flowcharts have been developed based on Section 8 and Section 9 of the FEMP that has already been reviewed and closed out by SES).

Comment Raised	Project Response	Where addressed	Status
A specific objective related to minimising flood impacts on the township of Stockinbingal during construction is	Section 3.4 updated to include a new objective: "Minimise flood impacts on the township of Stockinbingal during construction."	3.4 - Objectives and Targets	Closed

Comment Raised	Project Response	Where addressed	Status
needed. Important since flood mitigation measures may not be in place in time for the next flood.			
Dot point 9 - How about proactively mitigate or minimise flood impacts to the downstream Stockinbingal Township?	Section 3.4 updated to include: "Proactively mitigate or minimise potential flood impacts to the downstream Stockinbingal Township."	3.4 - Objectives and Targets	Closed
Dot point 2 - We are now called Regional Delivery within the Conservation Programs, Heritage & Regulation Group of the NSW Department of Climate Change, Energy, the Environment and Water (RD).	Section 4, dot point 2 updated to: "Regional Delivery (RD) within the Conservation Programs, Heritage & Regulation Group of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)."	4 - Community and Stakeholder Engagement	Closed
Dot point 5 - Could also add the "Support for Emergency Management Planning" guideline (EM01) that supports the FRM Manual..	Section 5.2 updated with a new dot point referencing "Support for Emergency Management Planning" guideline (EM01), Department of Planning & Environment (DP&E) 2023, that supports the Flood Risk Management Manual."	5.2 - Guidelines	Closed
Paragraph 1, last sentence - A newer LFP version is in place...the Cootamundra-Gundagai Local Flood Emergency Sub Plan (Nov 2023).	Section 5.3, paragraph 1 updated to include reference to the updated version of the Local Flood Plan (Nov 2023).	5.3 - Regional Flood Management Context	Closed
This section may need revising once the newer LFESP is reviewed.	Section 5.3 - review of the Incident management arrangements section (5.2) of the updated LFP undertaken. Section 5.3 of the FEMP amended to align with these requirements.	5.3 - Regional Flood Management Context	Closed
Tabe 6.1 - Some flood mapping to illustrate these flood behaviours would be useful.	Please refer to the Appendix A mapping which shows the flood behaviour for 1% AEP and PMF events. This mapping has been updated following consultation with SES regarding consideration of PMF in risk assessing potential compounds and lay down areas and planning for operating these sites during construction.	6.1 - Existing Environment	Closed
Table 6.2, Column heading 6 - Is this meant to be velocity (m/s) or velocity/depth (m2/s)?	Amended to m/s.	6.2 - Regional Flood Characteristics	Closed

Comment Raised	Project Response	Where addressed	Status
Table 6.2, Column heading 6, line item 3 - Should this be 2.0?	Run Boundary Creek is identified in Table 12-4 in the EIS as being 4.0m/s flows within the channel during a 1% AEP event. This has been retained in table 6-2 of the FEMP. The 2.3 value is identified in the tech paper as the flow during a PMF.	6.2 - Regional Flood Characteristics	Closed
Table 6.2, Column heading 6, line item 4 - Should this be 2.3?	As above, Isobel Creek is identified in Table 12-4 in the EIS as being 4.0m/s flows within the channel during a 1% AEP event. This has been retained in table 6-2 of the FEMP. The 2.3 value is identified in the tech paper as the flow during a PMF.	6.2 - Regional Flood Characteristics	Closed
Figure 6.1 - This figure shows the Rail crossing of Bland Creek...not Dudauman Creek.	Section 6.3.1, paragraph 2, last sentence updated to refer to Bland Creek.	6.3.1 - 1974 Flood at Stockinbingal Village	Closed
Table 8.1, Column 2 (Gauge Name) - This station is formally called "Wattle Creek at Dudauman".	Table 8.1 updated to include formal nomenclature of Gauge - "wattle Creek at Dudauman".	8.1 - Existing Streamflow Monitoring Stations	Closed
Figure 8.1 - Wattle creek at Dudauman.	Figure 8.1 updated to include formal nomenclature of Gauge - "wattle Creek at Dudauman".	8.1 - Existing Streamflow Monitoring Stations	Closed
Would be beneficial for this section to include a table that summarises and describes the triggers (i.e. rainfall/stream flow) and subsequent actions that would be implemented. Much of that content is included in this section but not clearly summarised.	Section 8.3 updated to include a table (Table 8.4) which summarises forecast rainfall triggers and subsequent actions.	8.3 - Forecast Rainfall Depths and Trigger Levels	Closed
Item 4 - Difficult to interpret the linkage between triggers and specific actions. For example - monitoring the BoM MetEye Product daily by the Environment and Sustainability Manager for rainfall events predicted to	Section 8.5, Item 4 updated to include a reference to the trigger summary table (table 8.4). The ongoing monitoring undertaken by the Environment team is in place to identify a significant forecast rainfall event that could produce flooding. If the forecast rainfall trigger (as per table 8.4) is identified, the environment	8.5 - Flood Warning Strategy	Closed

Comment Raised	Project Response	Where addressed	Status
be >36.8 mm within a 3-hourly forecast or >69.5 mm daily. What is the specific action if these rainfall events are predicted? When is a "flood event" defined and the actions in Table 9.1 implemented. A simple flow chart may be able to help clarify this.	manager will initiate the flood response process and site will begin pre-flood preparation. Rainfall / flood monitoring will continue during preparation works in accordance with Section 8.5 (i.e. items 1 to 4 will be used simultaneously to monitor water levels and flooding in real time, as well as receiving flood warnings and evacuation orders from emergency services. Site will adhere to directions from SES and will complete actions during flood events as per Section 9.1 depending on the outcomes of monitoring and flood watch notification and/or emergency service orders.	and Implementation	
A flow chart may also help explain the interaction between, and specific application of, the FEMP, the Flood Emergency Response Plans (FERPs) and Site-Specific Flood Preparation Plans (SSFPs) which is also a little confusing to interpret.	Table 8.4 has been included to identify specific triggers and applicable actions. Reference to the Flood Emergency Response Plans (FERPs) and Site-Specific Flood Preparation Plans (SSFPs) is included in the table. It is considered that the table provides the link between triggers and actions for implementation in place of a flow chart.	9.1 - Project Specific Construction Flood Emergency Response Plan	Closed
Paragraph 2, first sentence - The NSW Floodplain Development Manual (2005) has been replaced by the NSW Flood Risk Management Manual (2023). Please reference this current manual.	Section 9.1, paragraph 2, sentence 1 updated to include reference to NSW Flood Risk Management Manual (2023).	9.1 - Project Specific Construction Flood Emergency Response Plan	Closed
Table 10.1, Ref FEM31 - This is an important measure to limit the flood risk to the Stockinbingal Community during construction.	This comment is noted - this mitigation measure will be implemented during construction in compliance with the Revised Mitigation Measures and the approved FEMP.	10 - Flood Emergency Mitigation and Management Measures	Closed
The NSW SES are required to be consulted with in relation to this report. Rather than commenting on this draft I would've thought early engagement and collaboration with NSW SES would've been more beneficial. I can't seem to see anywhere in the report	Early Consultation has not occurred. Consultation in the development of this plan has been undertaken in accordance with CoA C17. All comments received from agencies including the NSW SES will be considered and included in the plan as appropriate. The FEMP has been developed in accordance with the requirements of the CoA and Updated Mitigation Measures and includes all flood	N/A	Closed

Comment Raised	Project Response	Where addressed	Status
where this has occurred. Given that this section is blank I suspect that this consultation has not occurred.	specific measures stated in the Environmental Assessment Documentation. A consultation log and comment register from relevant agencies is included in Appendix D.		

Cootamundra-Gundagai Regional Council

Date	Details of Engagement / Attempted Engagement
2/4/2025	Email to Cootamundra-Gundagai Council (CGRC) representatives from JHG requesting an initial discussion on the upcoming management plans required for consultation as per Condition C17 of the Conditions of Approval.
6/06/2025	Email from JHG and formal submission of the Management Plan to CGRC by IRPL for consultation.
26/06/2025	Monthly meeting held with Junee Council via Teams. Discussion and agreement made in this meeting to undertake a face-to-face workshop on the C17 management plans (including the FEMP).
1/07/2025	Face to face meeting with IRPL, JHG and CGRC representatives at the Council chambers. Meeting was undertaken as a page turn opportunity on each of the C17 plans with CGRC for consultation (including the Flood Emergency Management Plan). Comments provided at this meeting formalised into a summary (see attached meeting minutes).
1/07/2025	Comments on the Flood Emergency Management Plan provided to JHG from CGRC via email (incorporated into this plan).
1/07/2025	Response from JHG to CGRC email requesting a copy of the Stockinbingal Flood Assessment noted in the face-to-face meeting. CGRC provided this document which has been incorporated into the Plan on the same day.
3/07/2025	Meeting presentation and notes made by JHG submitted via email to CGRC and IRPL with confirmation of items to be addressed in the Plan.
8/07/2025	Email from CGRC staff confirming that no further comments on the Plan.
1/07/2025	Face to face workshop held with Junee Council, IRPL and JHG staff. Comments and questions made on the FEMP (see attached meeting minutes).
10/07/2025	Provision of meeting minutes to Junee Council with a follow up request to confirm if the Council would be providing any further comments on the Plan.
21/07/2025	Email from JHG to Junee Council requesting confirmation that the comments had been closed out and that no further comments anticipated. Meeting minute from the face-to-face workshop were provided on 10/07/2025 with follow up meeting minutes with close out of actions on the FEMP included and submitted via email on 21/07/2025.

Comment Raised	Project Response	Where addressed	Status
Junee Council No comments received	JHG will incorporate comments if received in future from Junee Council (where relevant to the Plan and the project) at the next revision.	NA	Closed
Cootamundra- Gundagai Council (see list below) Section 5.2 doesnt reference Stockinbingal study - council to provide copy	Section 5.2 updated to include reference to: "Stockinbingal Flood Study Report, Cootamundra-Gundagai Regional Council, March 2024:	Section 5.2	Closed
Section 6.2 - reference error	Section 6.2 - reference updated	Section 6.2	Closed
Section 8.5 - reference error	Section 8.5 - reference to Table 8.1 updated	Section 8.5	Closed
Section 9.1 - reference error	Section 9.1 - reference errors updated	Section 9.1	Closed
Section 11.3 - reference error	Section 11.3 - reference errors updated	Section 11.3	Closed
Increased risk to adjoining properties - not EMP related, larger consideration flood design verification report - pre and post construction reports required E64 and E71 - consultation occurring with impacted landowners.	Comment noted. The flood design verification report will be completed in accordance with the relevant Conditions of Approval	N/A	Closed

NSW SES

Date	Details of Engagement / Attempted Engagement
24/02/2025	Initial email from JHG to the group email inbox (rra@SES.com.au) for confirmation on the correct staff to contact and undertake consultation within SES on the Flood Emergency Management Plan.

Date	Details of Engagement / Attempted Engagement
25/02/2025	SES team provided a response to JHG and IRPL on the relevant staff who should be contacted to arrange meetings and briefings on the Plan.
27/02/2025	JHG team response via email confirming the team members and proposed catch up via teams scheduled for 13 March, 2025 for a briefing on the Plan.
10/03/2025	SES email to JHG confirming cancellation of upcoming meeting to discuss the Plan due to all resources and staff being assigned to field duty to support ongoing emergency responses due to impacts from Cyclone Alfred. JHG subsequently cancelled the meeting and re-assigned a catch up for April 2,
2/04/2025	Microsoft teams meeting held between JHG, IRPL and SES representatives to discuss the approach to the Flood Emergency Management Plan and confirm initial comments and next steps.
15/04/2025	Email from JHG to SES and IRPL sharing meeting minutes from the Teams call undertaken on 2/4/2025. Meeting minutes included key discussion points from the meeting including items to be incorporated into the Management Plan.
6/06/2025	Email from JHG to SES team with an attached copy of the draft Flood Emergency Management Plan for consultation as per Condition C17.
1/07/2025	Email correspondence received from NSW SES regarding comments on the Flood Emergency Management Plan.
14/07/2025	Teams call between SES and JHG team to discuss one comment associated with incorporating the PMF into construction risk assessments in the Flood Emergency Management Plan. Comment was addressed and document updated.
17/07/2025	JHG email providing an updated version of the Plan to SES staff for confirmation of the comments being addressed and to confirm closed.

Comment Raised	Project Response	Where addressed	Status
The risk assessment should consider the full range of flooding, including events up to the Probable Maximum Flood (PMF) and not focus only on the 1% AEP flood. This is to ensure Emergency Management risks to the community of the full range of floods are effectively understood and managed. It is noted that modelling shows that the designed rail line will not be overtopped by 1%	John Holland has revised the risk assessment in Appendix E to incorporate 1% AEP events and PMF in the risk assessment mapping. The Plan has been updated to incorporate the “stay in place” guidelines to ensure that these guidelines are met when considering the location of construction compounds and laydown areas and appropriate control measures as per Appendix B.	page 26	Closed

Comment Raised	Project Response	Where addressed	Status
Annual Exceedance Probability (AEP) design event.	It is also noted, the only location for workforce accommodation is the camp at Grogan Road north of Stockinbingal which is located outside the PMF and acceptable as a stay in place option.		
ARTC Inland Rail is weather aware and act early on severe weather warnings. The NSW SES does not have the operational capacity to provide individualised flood warnings for each site, however, works with the agencies to manage flood risks during severe weather. During periods of widespread flooding the NSW SES will have to deal with many communities facing the impact of flooding.	I2S will implement flood emergency response including monitoring, notification and preparation works pre-flood. JHG will adhere to SES (or delegated emergency service) direction regarding evacuation orders etc.	Section 8	Closed
There is no such thing as a safe period of isolation although obviously the shorter the better and the longer the period of isolation, the more chance there is for mishap requiring external intervention. Even relatively brief periods of isolation, in the order of a few hours, can lead to personal medical emergencies that have to be responded to	Noted. The Project Director and WHS Manager will use all information readily available (i.e. Publicly available real time monitoring data and Flood Watch Warnings) available to make a decision on evacuation of personnel. This is covered in Section 8 and 9 of the FEMP.	Section 8 and 9	Closed
Any flood response directive issued by the NSW SES or by delegated authority to others acting on its behalf must be followed. This includes any order to evacuate the site or not evacuate the site, irrespective of what decisions have been made by management in accordance with this FERP.	This is a commitment already made in the FEMP.	Section 9 and 10	Closed
Flooding emergency management plans should be regularly exercised, similar to building fire evacuation drills. We note the Review and Improvement section 12 which has a FERP Review and Revision Process. The NSW SES also recommends updating the FERP at regular	Section 12.1 updated to include an additional dot point: "Regularly exercise the FEMP during construction including desktop and mock emergency drills." Section 12.2 updated to include reference to "changes in guidelines"	Page 55	Closed

Comment Raised	Project Response	Where addressed	Status
intervals and whenever additional flood information is available or highlighted during the drills or flood events.			
The locations may be remote from the main community and therefore not linked toexisting community networks for warning and assistance purposes. It will be difficult for the NSW SES to monitor remote locations such as rural communities. The morespecific the warning requirement for individuals and sites becomes, the more difficult it is for the NSW SES to deliver warnings in the short time frames that often apply.	This is covered by Section 8 of the FEMP.	Section 8	Closed
Areas that do not have independent means of evacuation complicate the NSW SESflood response. The NSW SES has very limited human resources and cannot undertake to help out at all sites that mat need it. Evacuation plans must be self-sufficient and need to consider that other sections in the community may be placing demands on public and provate transport resources.	Noted. the emergency procedures in place will be sufficient in addressing this. The Project Director and WHS Manager will use all information readily available (i.e. Publicaly available real time monitoring data and Flood Watch Warnings) available to make a decision on evacuation of personnel. This is covered in Section 8 and 9 of the FEMP.	Section 9	Closed

Appendix E Flood Risk Assessment

This flood risk assessment is sourced from the CEMP and contains relevant mitigation measures provided in the Infrastructure Approval, RMMs and Section 8.1 of the Project EIS Technical Report 4 - Hydrology and Flooding Assessment.

Construction Activity /Aspect	Potential Impact	Risk Level Prior To Mitigation	Indicative Mitigation Measures	Risk Level Following Mitigation	Documents/Procedures /Training Required
General earthworks and construction Permanent Spoil mounds and stockpiling of other materials Laydown areas Fuels, chemicals and hazardous materials Plant and machinery	Construction Works performed in such a way that it; - Increases the area that is subject to inundation - Increases the time that an area is subject to inundation or; - Increases the flood water velocities and depths resulting in; - Increased scour/erosion risk; - Increased risk to human life (evacuation routes etc.) - Increased risk to destruction of property; - Increased risk to matters of environmental significance (i.e. TEC, threatened flora species, threatened fauna species habitat, heritage items, etc) - Increased risk of contamination from fuels, chemicals, hazardous materials	High	Construction planning and the layout of construction work sites and compounds would be carried out with consideration of overland flow paths and flood risk, avoiding flood liable land, where possible. Ancillary facilities will be located at least 50m from watercourses and outside the 5% AEP flood zone. Where possible, the permanent drainage arrangement (i.e. longitudinal and transverse drainage) will be installed prior to mainline earthworks occurring. Where this cannot be undertaken, mainline earthworks will not be completed in the locations of new culverts. At these locations, a sufficient break will be left within the embankment, extending beyond the footprint of the proposed culvert to allow adequate flows, those being equal to or better than, pre-construction conditions. No stockpiles of materials, construction equipment or storage of fuels or chemicals within low lying areas, waterways, or drainage lines. All JHG personnel and sub-contractors working on site will be provided with training with regards to flooding, including preparation, mitigation and management and their responsibilities pertaining to the FEMP and FERP. Where possible, long-term stockpiles (>1 month), ancillary facilities, laydown areas, plant/equipment/material storage and chemical storage areas will be located outside the area impacted by the 5% AEP local and regional flood events.	Medium	Flood Emergency Management Plan SAP Toolbox Talk – flood emergency Induction SSFP Minor Ancillary Facility Checklist

Construction Activity /Aspect	Potential Impact	Risk Level Prior To Mitigation	Indicative Mitigation Measures	Risk Level Following Mitigation	Documents/Procedures /Training Required
	and / or ablution blocks being inundated during a flood event. - Flooding/inundation of construction sites and laydown areas causing damage to plant, equipment, materials, stockpiles, facilities, structures etc. and also causing safety risk to personnel		During times of significant rainfall or predicted significant rainfall or flooding, the JHG Environment and Sustainability Manager (or delegate) will be consulted, and work activities reassessed for potential impact to flooding. All culvert and bridge demolition and construction would be undertaken in a manner that minimises, as far as practical, the potential flooding on the waterway and surrounding environment. This would be achieved by: ▸ No stockpiling or storage of materials or equipment in the main drainage channel. ▸ Monitoring the weather forecast and associated warnings and removing materials that may restrict flow. ▸ Ensuring a clean water flow is maintained as far as practical. Prior to the establishment of a permanent spoil mound, approval must be sought from JHG Environmental Manager (or delegate) and IRPL. Approved spoil mounds must comply with the following: ▸ Be located at least 100m from any watercourse, wetland or culvert and not within an area where the rail formation (or proposed spoil mound location) is predicted to be overtopped or inundated during a 1% AEP (or other) flood or severe wet weather event. Suitable site preparation works will occur in accordance with the relevant SSFP (template provided in Appendix B) in the event that a Flood Watch or Flood Warning is issued by BoM. Contact details of local upstream land holders will be obtained and contacted when works are occurring in the area and when flood and / or severe weather is predicted to determine what flood preparedness works need to be undertaken. All construction traffic, both light and heavy vehicles, will obey road closures due to flooding or otherwise.		

Construction Activity /Aspect	Potential Impact	Risk Level Prior To Mitigation	Indicative Mitigation Measures	Risk Level Following Mitigation	Documents/Procedures /Training Required
			Do not reduce watercourse flow areas. The SSFP (Appendix B) will include a review of the Flood Impact Mapping from the EIS to determine the areas anticipated to be impacted by a flood event and to ensure the following is considered and where relevant actioned when a Flood Warning is issued by BoM: ▸ All stockpiles of materials, plant, machinery and general construction equipment is repositioned to reduce risk of exposure to the pending flood event. ▸ All hazardous materials, chemicals, fuels and ablution blocks are repositioned to reduce the risk of exposure to the pending flood event. ▸ If mainline earthworks have commenced, then sufficient drainage (i.e. cross-sectional area equal to or greater than previous) must be provided at existing culvert locations. The ESCs are reviewed and in consultation with the CPESC improved accordingly. ▸ A review of the environmentally sensitive areas in close proximity to the areas shown to convey water and if required, take additional measures to ensure that construction works do not worsen the impact to these environmentally sensitive areas. These may include: increase stabilisation across the catchment, use rock and other alterative measures to reduce scouring, dewatering post flood event, diversion of flood waters around environmentally sensitive areas etc.		
Temporary Works (incl. temporary waterway crossings, piling pads and instream works (waterway diversions and	Construction Works performed in such a way that it; - Increases the area that is subject to inundation; or - Increases the time that an area is subject to inundation or;	High	All temporary works performed by JHG will be planned, designed, and constructed in accordance with the following requirements: - All temporary works must be designed by a suitably qualified and experienced Engineer in accordance with any relevant, third party design standards and guidelines. - Relevant temporary works must be constructed in accordance with an approved TRA detailing the construction steps, stages and methodology of the works.	Medium	Temporary Works Design Task Risk Assessment (incl. construction methodology) Site Specific Flood Preparation Plan (template in Appendix B)

Construction Activity /Aspect	Potential Impact	Risk Level Prior To Mitigation	Indicative Mitigation Measures	Risk Level Following Mitigation	Documents/Procedures /Training Required
damming works).	- Increases the flood water velocities; resulting in; - Increased scour/erosion risk; - Increased risk to human life (evacuation routes etc.) Increased risk to destruction of property; - Increased risk to matters of environmental significance (i.e. TEC, threatened flora species, threatened fauna species habitat, heritage items, etc) - Increased risk of contamination from fuels, chemicals, hazardous materials and / or ablution blocks being inundated during a flood event.		- Where temporary works may pose a risk to the worsening of flood impacts, it must be peered reviewed by a suitably qualified and experienced Hydrologist. NOTE: The Hydrologist is to ensure that the proposed works do not significantly adversely affect flood behaviour and shall be assessed in terms of their potential impacts on hydraulic hazard both inside or outside the rail alignment during any flood event up to and including a 5% AEP flood event. The proposed temporary works will not commence until the Hydrologist has approved the works to proceed. - A SSFP (Appendix B) will be prepared for the site that includes the temporary works and flood preparation and response measures specific to those works. - If temporary drainage arrangements are required, these will be sufficiently sized for the anticipated flow. - In the event of a Flood Watch or Flood Warning issued by BoM, temporary works (i.e. temporary waterway crossing etc) are assessed and removed where reasonable and feasible.		

Appendix F Flood Warning and Emergency Response Flowcharts

The Environment Manager will implement all Mitigation Measures (MM) detailed in Table 10-1 (Section 10) of the Flood Emergency Management Plan (including MM FEM5 and FEM6).

The following flowchart describes the process for flood warning across the I2S Project and actions to be undertaken before and during a flood event).

Trigger Category	Threshold / Rainfall Depth (mm)	Storm Duration / IFD
Forecast rainfall	25	30-minutes
	+36.8	3-hour
	50	6-hour
	+69.5	24-hour

Environment Manger will review the BoM Met Eye forecast daily and for the next 6 days for rainfall and inclement weather events (in accordance with Section 8.5(4) of the Flood Emergency Mgt Plan (this Plan).

Does the BoM Met Eye predict a weather event that forecast rainfall above the trigger categories in Table 8-4?

NO
Weather event is not forecast to exceed trigger categories (continue daily reviews) in accordance with Section 8.5

YES
BoM Met Eye forecast predicts that a weather event will be in exceedance of:

>36.8 mm within a 3-hourly period and/or forecast >69.5 mm daily (24 hr period)

Table 8-4 (see table above).

ACTION REQUIRED

Implement the following Actions before and during an anticipated event.

ACTION 1: Continue to monitor meteorological forecast and BOM flood warnings before and during an event (Section 8.4.1)

ACTION 2: Continue to implement Items 1 to 4 of the flood warning strategy before and during an event (Section 8.5).

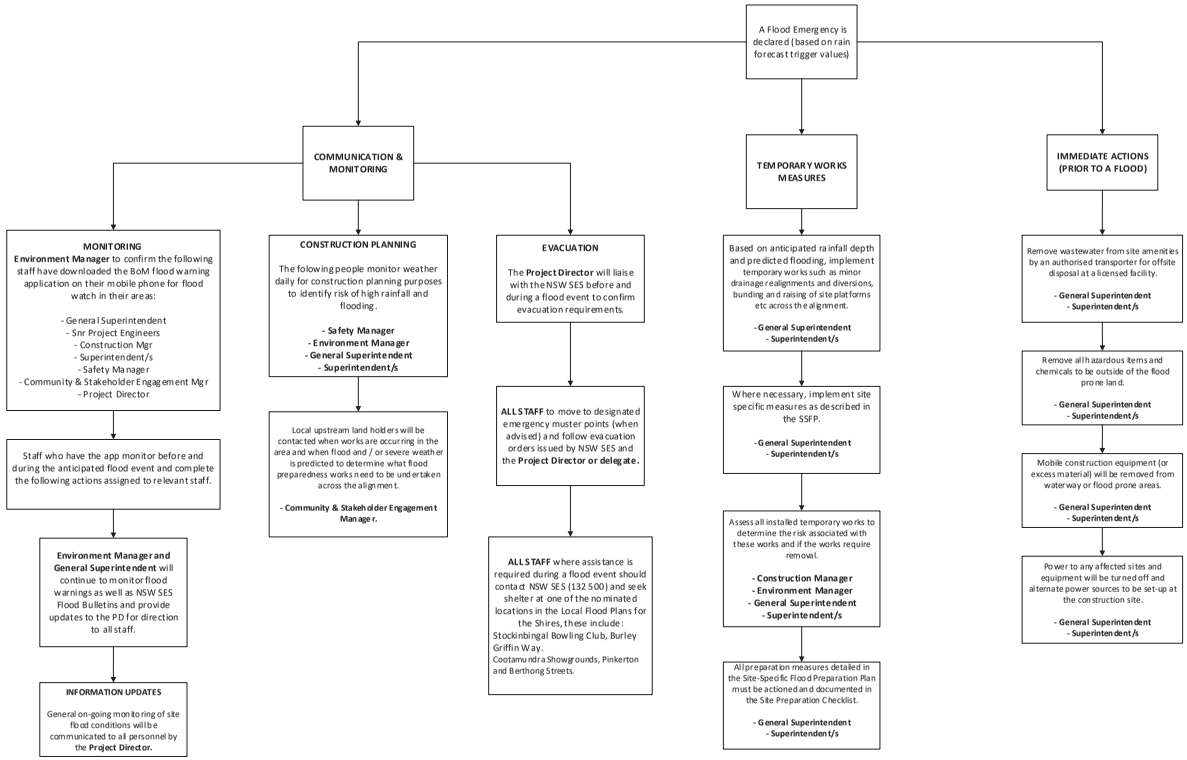
ACTION 3: (For actions across the whole Project)

Enact the Project Specific Construction Flood Emergency Response Plan (Section 9) based on forecast rainfall triggers.

ACTION 4: (For areas where a SSFP is in place)
Implement actions for the following stages in each nominated Site Specific Flood Preparation Plan (SSFP).

- Preparation (Get Ready)
- Response (During Flood)

Pre-flood and during-flood actions will also be determined based on direction of emergency services and the Project Director.


A Flood Emergency is declared (based on rain forecast trigger values)
COMMUNICATION & MONITORING
TEMPORARY WORKS MEASURES
IMMEDIATE ACTIONS (PRIOR TO A FLOOD)
MONITORING
Environment Manager to confirm the following staff have downloaded the BoM flood warning application on their mobile phone for flood watch in their areas:
- General Superintendent
- Snr Project Engineers
- Construction Mgr
- Superintendent/s
- Safety Manager
- Community & Stakeholder Engagement Mgr
- Project Director
Staff who have the app monitor before and during the anticipated flood event and complete the following actions assigned to relevant staff.
Environment Manager and General Superintendent will continue to monitor flood warnings as well as NSW SES Flood Bulletins and provide updates to the PD for direction to all staff.
INFORMATION UPDATES
General on-going monitoring of site flood conditions will be communicated to all personnel by the Project Director.
CONSTRUCTION PLANNING
The following people monitor weather daily for construction planning purposes to identify risk of high rainfall and flooding.
- Safety Manager
- Environment Manager
- General Superintendent
- Superintendent/s
Local upstream land holders will be contacted when works are occurring in the area and when flood and / or severe weather is predicted to determine what flood preparedness works need to be undertaken across the alignment.
- Community & Stakeholder Engagement Manager.
EVACUATION
The Project Director will liaise with the NSW SES before and during a flood event to confirm evacuation requirements.
ALL STAFF to move to designated emergency muster points (when advised) and follow evacuation orders issued by NSW SES and the Project Director or delegate.
ALL STAFF where assistance is required during a flood event should contact NSW SES (132 500) and seek shelter at one of the nominated locations in the Local Flood Plans for the Shires, these include: Stockinbingal Bowling Club, Burley Griffin Way, Cootamundra Showgrounds, Pinkerton and Berthong Streets.
Based on anticipated rainfall depth and predicted flooding, implement temporary works such as minor drainage realignments and diversions, bunding and raising of site platforms etc across the alignment.
- General Superintendent
- Superintendent/s
Where necessary, implement site specific measures as described in the SSFP.
- General Superintendent
- Superintendent/s
Assess all installed temporary works to determine the risk associated with these works and if the works require removal.
- Construction Manager
- Environment Manager
- General Superintendent
- Superintendent/s
All preparation measures detailed in the Site-Specific Flood Preparation Plan must be actioned and documented in the Site Preparation Checklist.
- General Superintendent
- Superintendent/s
Remove wastewater from site amenities by an authorised transporter for offsite disposal at a licensed facility.
- General Superintendent
- Superintendent/s
Remove all hazardous items and chemicals to be outside of the flood prone land.
- General Superintendent
- Superintendent/s
Mobile construction equipment (or excess material) will be removed from waterway or flood prone areas.
- General Superintendent
- Superintendent/s
Power to any affected sites and equipment will be turned off and alternate power sources to be set-up at the construction site.
- General Superintendent
- Superintendent/s