APPENDIX B1-B APPROACH TO PROVISION OF ENVIRONMENTAL OFFSETS

CONTENTS

APPENDIX B1-B APPROACH TO PROVISION OF ENVIRONMENTAL OFFSETS

1 Introduction

Changes to legislation in Queensland since development of the EIS, specifically the *Environmental Offsets Act 2014* (EO Act), *Environmental Offsets Regulation 2014* (EO Regulation) and Queensland Environmental Offsets Policy 2014 (EO Policy) now determine when and how offsets will be provided and coordinated across local government and State government with links to the Commonwealth and Matters of National Environmental Significance (MNES). The Commonwealth also released the Environmental Offsets Policy 2012 replacing the previous draft policy. As a result, while all information was previously provided in the EIS (or separately to the Coordinator-General) to suit development of an offset plan in accordance with legislation and policy at the time, the approach now requires reconsideration.

SunWater's approach to offsets is as follows:

- Avoid, minimise and mitigate impacts on protected matters (Commonwealth) or prescribed matters (State and Local) to the extent reasonably practicable.
- When significant residual impacts remain (as determined through use of the relevant Significant Impact Guidelines), provide an offset which is commensurate with the type and extent of impact on the matter of national, state or local environmental significance as applicable. State and Commonwealth offset calculators have been used where applicable.
- While undertaking the above, address the requirements for Commonwealth offsets first then avoid duplication of assessment at State or local government levels. (Section 15 of the *Environmental Offsets Act 2014* removes the ability for the State and local government to impose an offset condition in relation to a prescribed activity, if a Commonwealth decision has already been made in relation to the same, or substantially the same activity, prescribed environmental matter and area of impact).
- Attempt to co-locate offsets and mitigation / rehabilitation actions as much as possible and link with existing protected or remnant habitat in order to maximise the contiguous area of useable habitat.
-
- Develop and seek endorsement of a Draft Offset Plan (based on this approach) from the Commonwealth Minister and Coordinator-General and accept conditions of approval regarding finalisation of the Plan.
- Provide the offset as a mix of proponent driven offsets (direct land-based offset and Direct Benefit Management Plan) and financial settlement offsets.
- Finalise and seek approval for the Offset Plan and Agreed Delivery Arrangement following detailed design and prior to commencement of the action/project.

2 Commonwealth offsets under the EPBC Act

Offsets relevant to impacts on EPBC protected matters were identified and discussed in Section 28.4.4 of the EIS. Using the Significant Impact Guidelines Section 28.4.4.2, conclusions made regarding residual impacts have been updated in Chapter 28 of the AEIS to take into account changes to the project or to impact assessment.

Following assessment of impacts and application of mitigation strategies, residual impacts that were not of a minor nature were assessed as applying to the following MNES:

Threatened Ecological Communities:

- Loss of up to 174.5 ha of Endangered Brigalow Ecological Community (EC).
- Loss of 5.6 ha of wetland associated with 23 springs which are part of the Endangered "Community of native species dependent on natural discharge of groundwater from the Great Artesian Basin".

Threatened Species:

- Loss of 1.02 ha of known habitat of the Critically Endangered Boggomoss Snail (*Adclarkia dawsonensis*) from Boggomoss 14, and 1.38 ha of potential habitat nearby on Mt Rose station; and
- Loss of 3,306 ha of habitat suitable for the Vulnerable Squatter Pigeon (*Geophaps scripta scripta*).

It is noted that the area of Brigalow nominated here differs from that reported in the EIS. The regrowth within the Water Storage Area reported in the EIS was the total area of mixed polygons containing REs associated with Brigalow whereas the figure used here has separated the components within these polygons.

An offset applicable to each significant residual impact is identified below. The offset calculator was employed to determine the extent of likely offset required and a summary of the process has been provided separately to DoE. The availability of the offset is based on assessments undertaken by Aurecon in July 2013 using desktop information and EIS related data, which made assumptions regarding the condition of vegetation. As a result, the offsets suggested here may alter as further information, particularly on the condition of the possible offset areas, becomes available and through discussions with DoE. The same is true of MSES (State related offsets).

Arthraxon hispidus, Hairy Joint grass (Vulnerable, EPBC Act), was noted in the EIS as likely to be present. Pennay *et al* (2012) updated its distribution to include 17 springs within the greater project area. Of these, four will be inundated when the storage is at Full Supply Level (FSL) while the others will not be impacted. As the species is known from springs outside FSL this value will not be lost to the community or from either of the complexes from which it is known. The conservation ranking of each complex will remain as it is now. The springs database also lists the species as present at three other Springsure group recharge springs which are not affected by the project. As such the assessment of the significance of the residual impact remains unchanged; not significant. However the offset related to the spring community will specifically include sites at which the species occurs but where it is currently not protected. Those sites are currently under threat from grazing, weeds, pig rooting and fire.

No offset is provided for the Vulnerable Fitzroy River turtle (*Rheodytes leukops*) because the species has not been confirmed in the impact area despite repeated and targeted surveys so the initial direct impact level is zero. Indirect impact related to flow regime change was determined as not significant and with respect to the low flow regime, potentially beneficial to the species. Numerous mitigation actions related to turtles in general were incorporated into the project design. Given the initial impact level, the residual impact on the species cannot be considered significant and no offset is required.

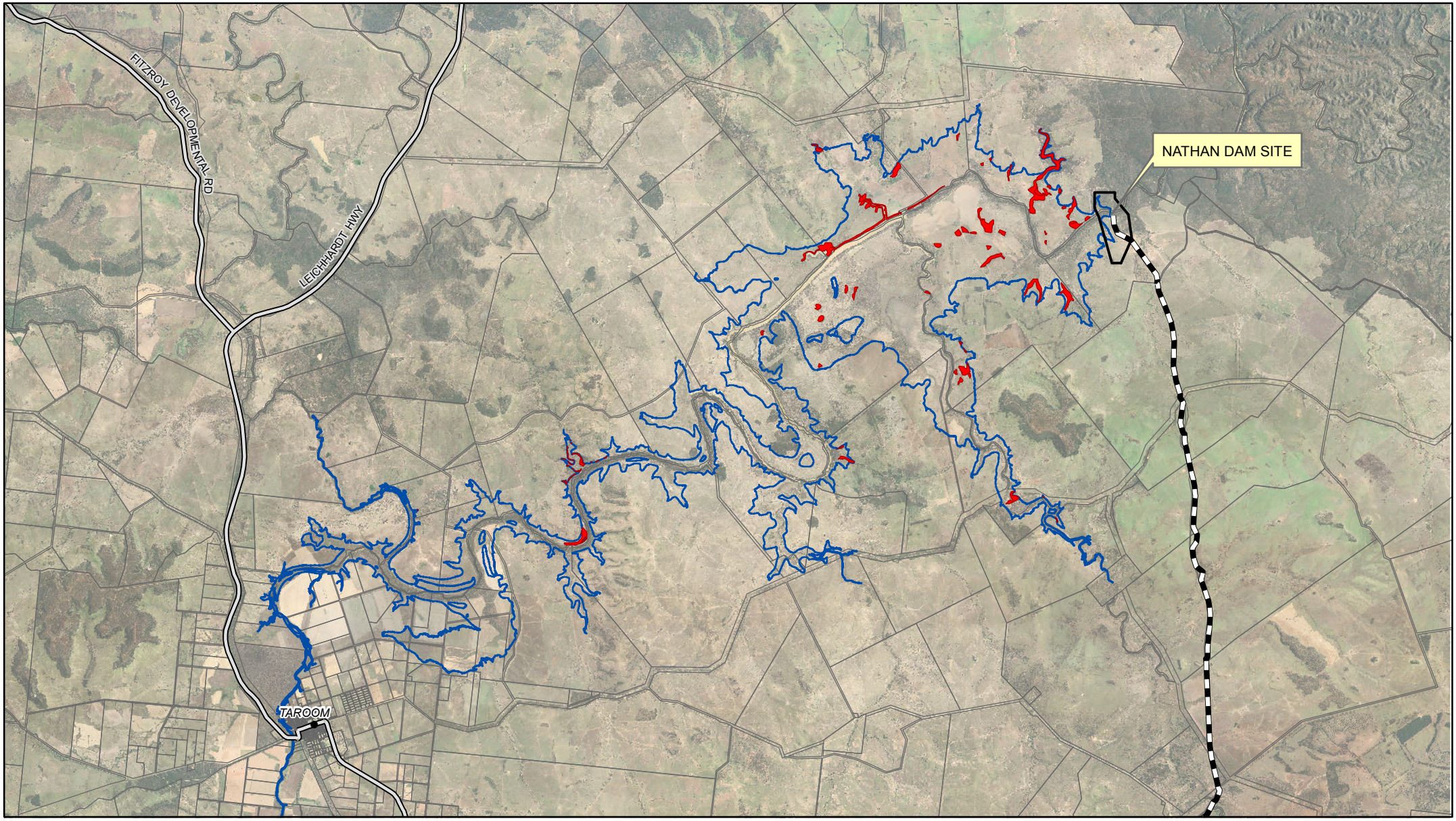
The species has been confirmed present at two other SunWater project sites in the catchment; Connors River Dam (approved) and Lower Fitzroy Weirs (EIS phase). SunWater is committed to satisfying the conditions of approval related to the species for Connors River Dam when that project moves to development. Those conditions included a catchment wide conservation strategy and the lower Dawson River will be included within that strategy as the species has been confirmed as present in this area. It is also anticipated that if the Lower Fitzroy Weirs project is approved that such approval will include conditions related to the species as it has been confirmed as present in that location.

2.1 Offset for Brigalow

Table 3 details the areas and types of brigalow impacted and brigalow communities within FSL are shown on **Figure 1**. It is expected a total of approximately 745 ha will be included within the offset (to be confirmed by ground truthing of the quality of the offset areas). Offsets related to RE 11.9.1 and 11.9.5 can feasibly be obtained from properties surrounding the water storage (**Figure 2**). SunWater will target obtaining the offsets from three adjoining properties; Spring Creek, Boggomoss and Mt Rose along with Farnham, which is directly across the river from Spring Creek. Focussing on these adjoining properties supports the objective of providing contiguous offsets wherever possible but also aligns with the SunWater proposal to reinstate a wildlife corridor on the northern side of the water storage commencing from Precipice National Park (which directly abuts Spring Creek property) (**Figure 3**). The targeted Brigalow on the "Boggomoss" property represents a substantial patch of habitat upstream and adjoining an area targeted for offset of spring communities which will be achieved via incorporation into an extension of the existing Boggomoss Nature Reserve. From the expanded nature reserve the corridor will link to Lot 4031 SP212959, a Defined Forest Area of State Land to the north. The relatively small area on Farnham is important because it adjoins another proposed area of spring offset on Price Creek. The northern properties are currently owned by the State (other than Boggomoss) and the area needed for the project, including any offsets, will be transferred to SunWater prior to project commencement. As the remainder of the area of the properties will still be viable for cattle grazing, the structure of the offsets and the wildlife corridor will require consultation with the lessee's.

Offset for brigalow represented by RE 11.3.1, if necessary to be provided separately, cannot be supplied on properties affected by the water storage but can be obtained on one land parcel managed by the Woorabinda Aboriginal Shire Council. The land is near the junction of the Dawson and Mackenzie rivers. In this area it is proposed that a Nature Reserve be established and a management plan developed. SunWater will delegate management of the offset area to the Council and fund that management.

Confirmation of a fully compliant offset strategy will follow ground truthing and negotiations with Council.



LEGEND

- Town
- State Controlled Road
- Pipeline Route
- Full Supply Level (183.5m AHD)
- Cadastre
- Construction Footprint
- Brigalow Ecological Communities

Brigalow Regional Ecosystem:
11.10.9/11.9.1
11.3.1
11.3.2/11.9.5a
11.3.3/11.3.25/11.3.1
11.3.3/11.3.4/11.9.1/11.3.1
11.9.1
11.9.10/11.3.1
11.9.5
11.9.5/11.9.10
11.9.5a/11.9.7/11.3.2
11.9.7/.11.9.5

Projection: GDA94 Zone 56

Figure 1

0 1 2 4
Kilometres

N

Scale 1:200,000 (at A4)

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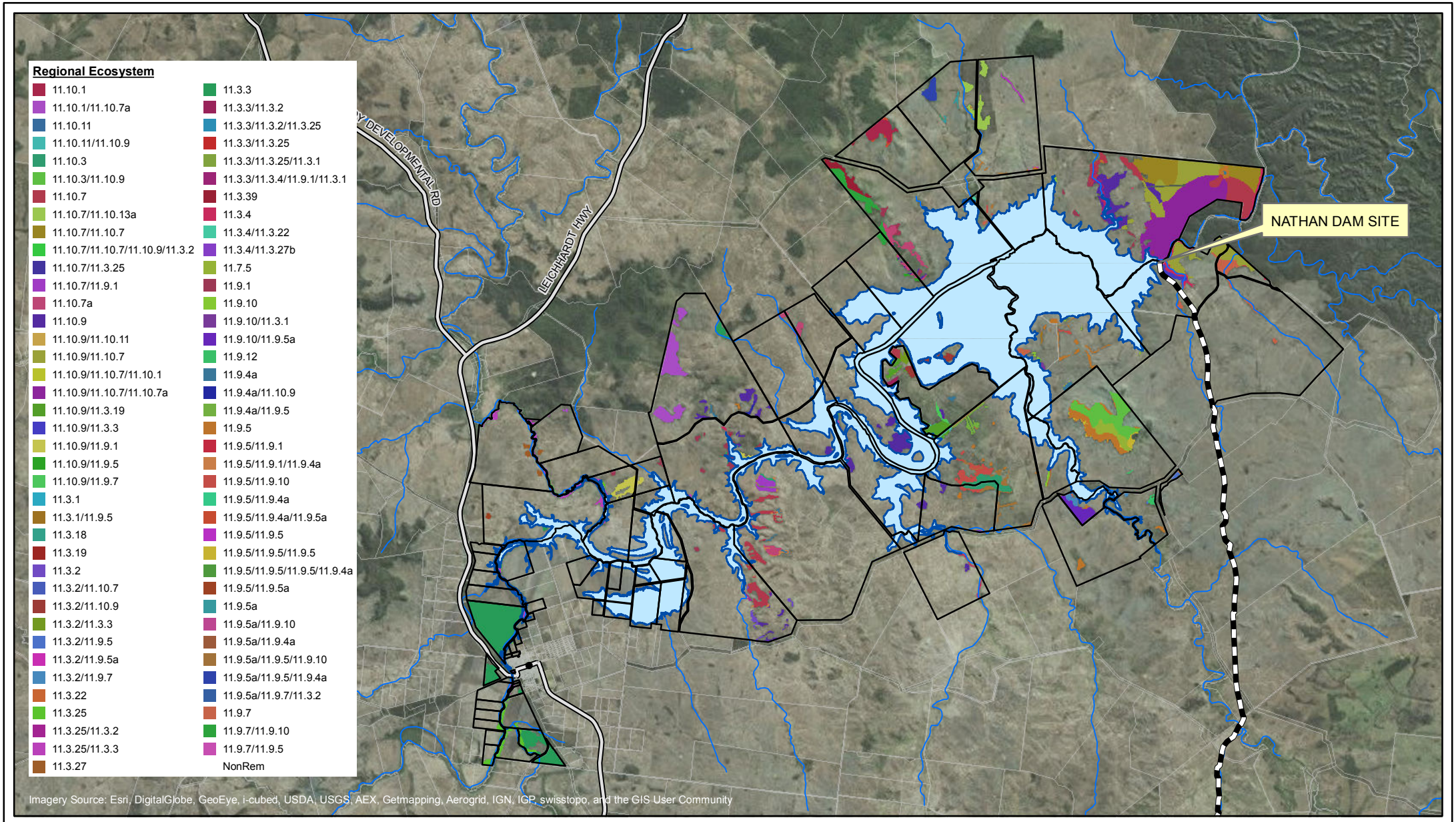
NATHAN DAM AND PIPELINES SEIS

Impact on Brigalow Ecological Communities within the Full Supply Level



LEGEND

- Town
- Watercourse
- Pipeline Route
- State Controlled Road
- Cadastre
- Offset Property
- Full Supply Level (183.5m AHD)

Projection: GDA94 Zone 56

Figure 2

0 1 2 4
Kilometres

N

Scale 1:250,000 (at A4)

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ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Offset Properties - Dam Regional Ecosystems

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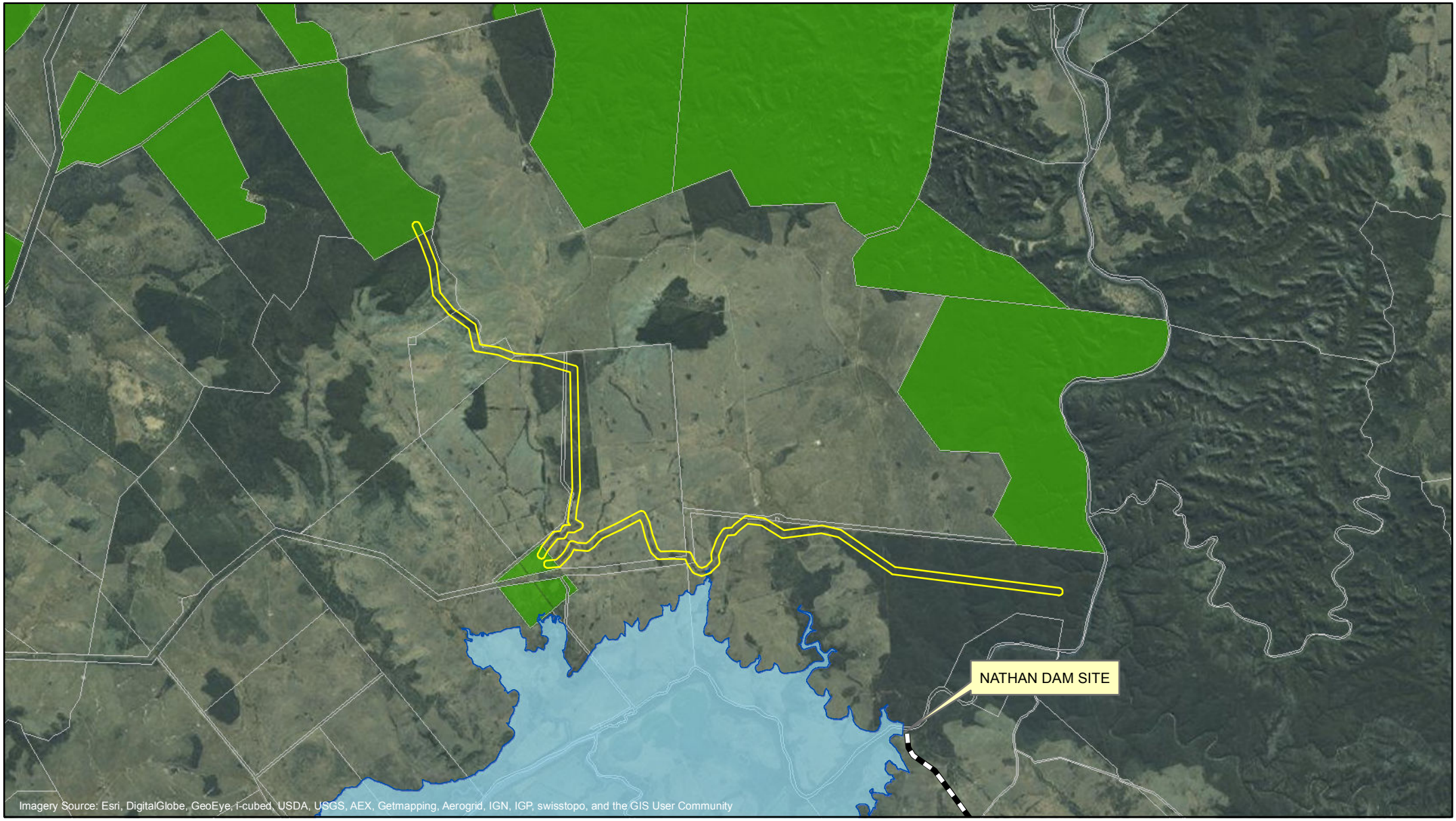

LEGEND

- Pipeline Route
- Cadastre
- Full Supply Level (183.5m AHD)
- Proposed Wildlife Corridor - 200m
- Protected Area / Nature Refuge

Projection: GDA94 Zone 56

Figure 3

0 0.5 1 2
Kilometres

N

Scale 1:135,000 (at A4)

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ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Indicative Wildlife Corridor

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2.2 GAB Springs

Communication from SEWPaC (now DoE) dated 1 September 2011 clarified that "the values of this ecological community relate to the community of the native species dependant on the groundwater discharge rather than the number and location of the specific springs." Offsets for flora or fauna species or for communities is usually based on comparing the area and quality of habitat impacted with that of the proposed offset via a measure of ecological equivalence. The QLD Springs database (accessed November 2015) identifies an area of wetland associated with each spring, provides a conservation ranking and provides information on the existing condition. "Condition" relates to excavation, pig or stock damage and is recorded in the database on scales of 0-4 or 0-3 (being none, minor, moderate or major). The database has been used to develop a "Habitat score" as a possible measure of equivalence and is based on the "Conservation ranking" and condition of springs as shown in **Table 1**. The scores may require re-assessment as it appears that the determination of what constitutes an isolated species within the database may not be accurate (refer to Section 28.1.4.2 of the AEIS).

Scores are provided only for springs impacted by inundation at FSL and for nearby Springsure group springs. An additional 13 EPBC listed springs are present in the Springsure group and, along with other members of the community, could contribute to the necessary offset.

Table 1 Habitat score

Habitat score	Conservation Ranking	Rationale
10	1a	>1 endemic species not known from another location
9	1a	1 endemic species not known from another location
8	1b	Contains endemic species known from more than one spring complex
7	1b	Contains populations of threatened species
6	2	Contains isolated populations and is in good condition
5	2	Contains isolated populations and is in poor condition
4	3	Contains none of the above and is in good condition
3	3	Contains none of the above and is in poor condition
2	4	Contains none of the above and is in very poor condition

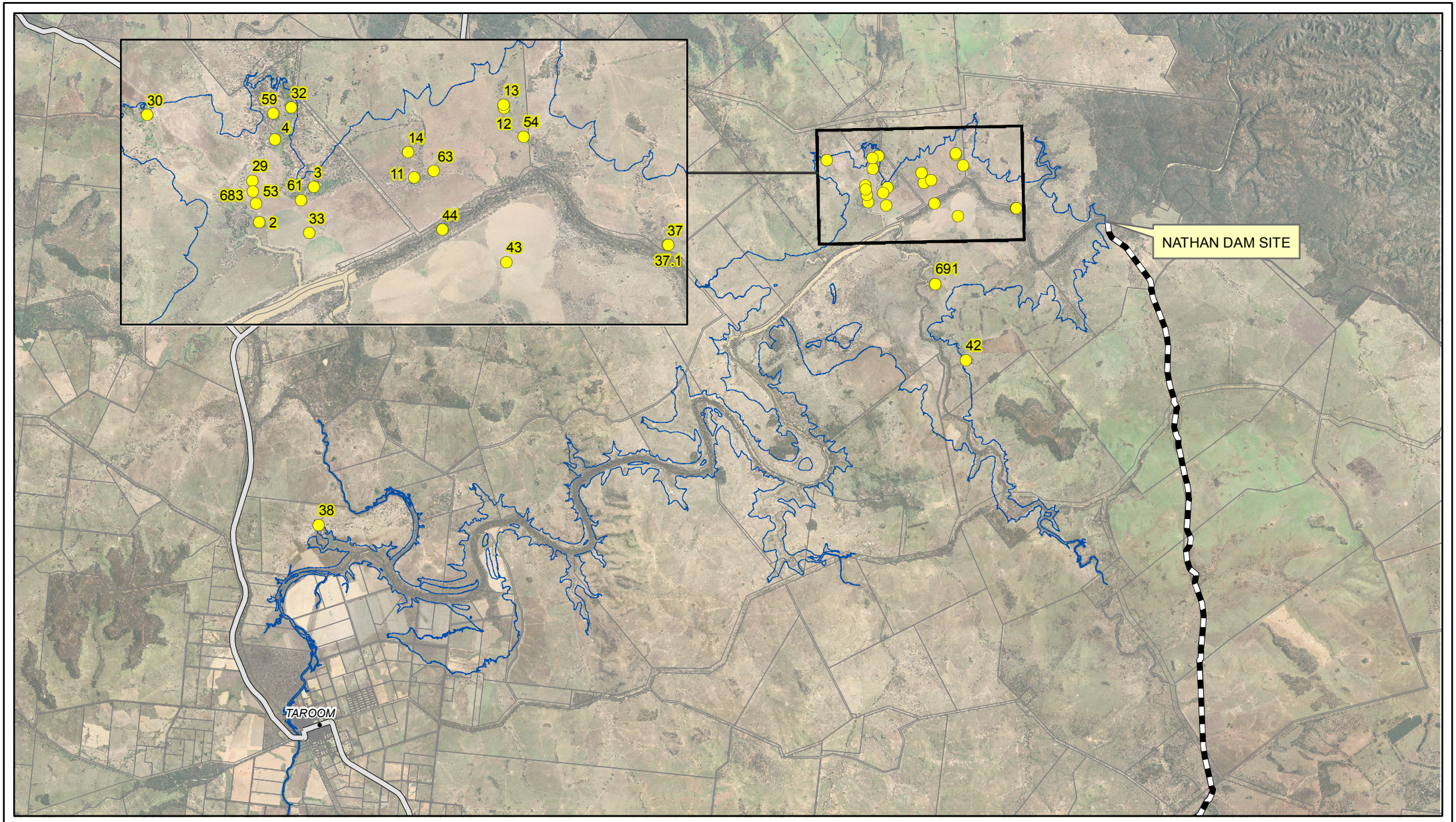
Table 2 presents the values of each impacted spring and potential offset springs as drawn from the Springs database. Figures 28-5 and 28-6 of Chapter 28 have been reproduced here as **Figure 4** and **Figure 5** and they show impacted and not-impacted (potential offset) springs, respectively.

Table 2 Comparison of values of impacted and potential offset springs

Spring ID	Wetland area ha	Threatened spp	Condition notes	Conservation ranking of vent	Habitat score
IMPACTED					
Dawson 6: 4	3.53	*A. hispidus*	Minor pig	1b	7
Dawson 6: 30	0.04	*A. hispidus*	Minor pig	1b	7
Dawson 6: 32	0.34	*A. hispidus*	Minor pig	1b	7
Dawson 6: 42	0.11	Isolated population	Minor stock	2	6
Dawson 6: 43	0.01	Isolated population	Major stock	2	5
Dawson 6: 59	0.08	*A. hispidus*	_	1b	7
Dawson 8: 38	0.48	_	Moderate excavation	3	3
Boggomoss 5: 2	0.1	_	_	2	5
Boggomoss 5: 3	0.04	_	Minor pig and stock	2	5
Boggomoss 5: 11	0.11	Isolated population	Minor pig	2	6
Boggomoss 5: 12	0.03	_	Minor pig, major stock	3	3
Boggomoss 5: 13	0.03	_	Minor pig, major stock	3	3
Boggomoss 5: 14	0.03	_	Major pig	3	3
Boggomoss 5: 29	0.01	Isolated population	Minor excavation	2	6
Boggomoss 5: 33	0.25	Isolated population	Minor excavation	2	6
Boggomoss 5: 37	<0.01	_	_	4	2
Boggomoss 5: 44	0.13	Isolated population	_	2	6
Boggomoss 5: 53	0.02	Isolated population	_	2	6
Boggomoss 5: 54	<0.01	Isolated population	Minor stock	2	6
Boggomoss 5: 61	0.14	Isolated population	_	2	6
Boggomoss 5: 63	0.03	Isolated population	Minor pig and stock	2	5
Boggomoss 5: 683	0.02	_	Major pig and stock	3	3
Boggomoss 5: 691	0.05	_	Moderate stock	3	3
TOTAL area or average habitat score	**5.59**				**5.0**
POTENTIAL OFFSET					
Dawson 6: 1	0.16	*A. hispidus*	Minor pig and stock	1b	7
Dawson 6: 5	0.55	*A. hispidus, T confluens*	_	1b	7
Dawson 6: 6*	0.23	*A.hispidus*	Minor pig and stock	1b	7
Dawson 6: 22*	0.10	*A.hispidus*	Minor pig and stock	1b	7

Spring ID	Wetland area ha	Threatened spp	Condition notes	Conservation ranking of vent	Habitat score
Dawson 6: 23*	0.17	*A. hispidus, T confluens*	Minor stock	1b	7
Dawson 6: 24	0.86	*A.hispidus*	Minor pig and stock	1b	7
Dawson 6: 25	0.09	*A.hispidus*	_	1b	7
Dawson 6: 27*	0.05	*A.hispidus*	Minor pig and stock	1b	7
Dawson 6: 31	0.82	*A.hispidus*	Minor pig	1b	7
Dawson 6: 60	0.09	*A.hispidus*	Minor pig and stock	1b	7
Dawson 6: 681	0.25	*A.hispidus*	_	1b	7
Dawson 8: 26	0.02	_	_	3	3
Dawson 8: 28	<0.01	_	_	3	3
Boggomoss 5: 7	0.13	*A.hispidus*	Minor stock	1b	7
Boggomoss 5: 8	0.17	_	Minor pig	2	5
Boggomoss 5: 9	0.03	Isolated population	Minor pig	2	6
Boggomoss 5: 10	0.05	Isolated population	Minor pig and stock	2	6
Boggomoss 5: 15	0.03	Isolated population	Major stock	2	5
Boggomoss 5: 55	0.04	Isolated population	Minor stock	2	6
Boggomoss 5: 56*	0.05	Isolated population	Minor pig and stock	2	6
Boggomoss 5: 57	0.35	Isolated population	Minor stock	2	6
Boggomoss 5: 58	0.06	Isolated population	Mod stock	2	6
Boggomoss 5: 62*	0.01	Isolated population	Minor stock	2	6
Boggomoss 5: 68*	0.06	*A.hispidus*	Minor pig and stock	1b	7
Cockatoo: 64	0.33	*E. carsonii, M. artesium*	Heavy excavation and stock	1b	8
Cockatoo: 65	0.07	*E. carsonii, M. artesium*	Heavy stock	1b	8
Cockatoo: 66	<0.01	_	_	3	3
Cockatoo: 319	0.07	*M. artesium*	Moderate stock	1b	8
Cockatoo: 320	0.01	*M. artesium*	Major stock	1b	8
Cockatoo 321	0.003	*E. carsonii, M. artesium*	Major stock	1b	8
Cockatoo: 684	<0.01	_	Moderate stock	3	3
Prices: 40	0.05	*E.carsonii*	Minor pig, mod stock	1b	8
Prices: 41	0.06	*E.carsonii*	Minor pig, mod stock	1b	8
Prices: 52	0.06	*E.carsonii*	Minor stock	1b	8
Prices: 67	0.04	Isolated population	Minor stock	2	6
TOTAL area or average habitat score	**5.07**				**6.4**

Note: * denotes the spring is within the Boggomoss Nature Refuge



LEGEND

- Town
- DERM EPBC GAB Spring Sites (2012)
- State Controlled Roads
- Pipeline Route
- Cadastre
- Full Supply Level (183.5m AHD)

Projection: GDA94 Zone 56

Figure 4

0 1 2 4
Kilometres

N

Scale 1:200,000 (at A4)

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ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Impact on Spring Sites within the FSL

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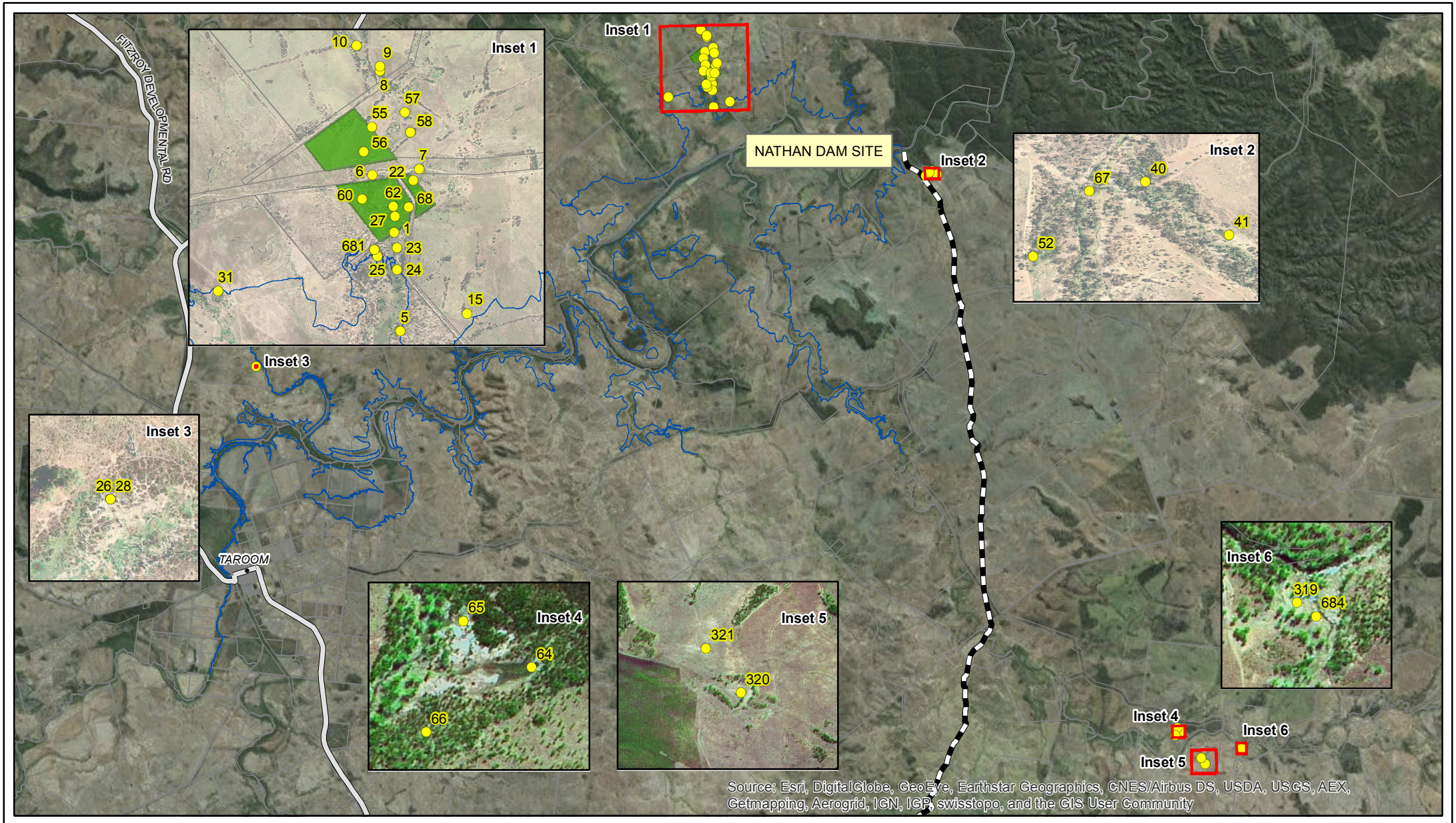

LEGEND

- Town
- DERM EPBC GAB Spring Sites (2012)
- State Controlled Roads
- Pipeline Route
- Cadastre
- Full Supply Level (183.5m AHD)
- Boggomoss Nature Refuge

Projection: GDA94 Zone 56

Figure 5

0 1 2 4
Kilometres

N

Scale 1:240,000 (at A4)

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ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Nearby Springs not Inundated at FSL

The total area of wetland for each of the 23 impacted springs is 5.59 ha while that of non-impacted springs is 5.07 ha though this is predicted to increase as a result of groundwater pressures resulting from the dam water storage.

Impacted springs have conservation rankings of between 1b and 4 and an average habitat score of 5.0. Non-impacted springs have conservation rankings of between 1b and 3 and an average habitat score of 6.4.

No endemic spring flora or fauna species have been recorded at the impacted sites. The non-impacted Prices and Cockatoo Creek complexes are the only complexes in the region that support the spring endemic species Eriocaulon carsonii while Cockatoo Creek complexes also support the endemic and NC Act listed Myriophyllum artesium. The Cockatoo Creek springs are in poor or very poor condition so provide significant opportunity for improvement.

The only threatened species included within the community at impacted sites is Hairy Joint Grass (Arthraxon hispidus) which is impacted at 4 sites. The species is present at thirteen non-impacted sites. Hairy Joint Grass is discussed above and in its own right it was concluded as not significantly impacted.

While the springs database suggested 36 species could be regarded as disjunct populations at the local springs, 18 of which occur at sites which will be impacted, analysis using the Atlas of Living Australia shows the latter number as seven and number of impacted springs with this conservation ranking characteristic is eight. The Herbarium (Laffineur pers. comm. August 2016) has since confirmed that one of these species *Laportea interrupta* was actually mis-identified and the specimen was later discarded. The database was updated as a result of SunWater's enquiry. The remaining species are:

- *Arthraxon hispidus*
- *Eleocharis tetraquetra*
- *Fimbristylis tetragona*
- *Salomonia ciliate*
- *Stylidium rotundifolium*
- *Wahlenbergia stricta subsp. Alterna.*

All of these occur on more springs above FSL (i.e. springs which are not impacted) than they do below FSL. All impacted species are likely to be amenable to translocation to other sites either as whole plants, cuttings or via propagation from seed.

The majority of impacted springs are in the Dawson River 6 and Boggomoss complexes. Seven springs within these complexes (marked in Table 2) have tenure protection within the Boggomoss Nature Refuge and are not impacted by inundation. However the reserve is not actively managed and the springs generally suffer from minor stock or pig damage. A significant number of springs within these complexes are unprotected but near the refuge. This provides an opportunity for SunWater to provide offsets via extension of these refuges to the south and north.

One spring within the Dawson River 8 (Palm Tree Creek) complex is impacted but SunWater intends to protect the two remaining springs.

SunWater proposes establishment of secure tenure for as many of the nearby non-impacted springs as possible and as many other springs as necessary to satisfy the offset requirement.

Appropriate management of all offset springs will be implemented to ensure their protection and ongoing health. This will include rehabilitation where necessary, which will also be extended to the existing Boggomoss Nature Refuge. This expanded reserve will also include areas of brigalow and squatter pigeon offset and the proposed wildlife corridor.

The site management plans will specifically address threats raised in the Recovery Plan and include fencing and control of feral animals and weeds. Pennay *et al* (2012) noted "The greatest threat to spring wetlands from exotic plants is from Para grass (Urochloa mutica)." This species was recorded from five sites within the Boggomoss 5 complex, four of which will be inundated by the water storage. SunWater will eradicate the plants at these four sites prior to the storage filling and will treat plants at the one remaining site with a mix of techniques aiming to avoid impacts to non-target species.

The Price Creek area of potential offset springs (inset 2 on **Figure 5**) abuts an existing State Reserve ("For official and Departmental purposes"; 1LE60) downstream of the dam. The State Reserve includes only recharge springs but while not part of the EPBC listed community, they do support many of the same community members. This is noted simply because these springs may provide re-colonisation potential for EPBC listed springs; it is not suggested that they form part of any formal offset for EPBC spring values.

2.3 Boggomoss Snail

Surveys since the floods of 2010/2011 have determined that very few individuals remain on the Mt Rose site (three were found). The EIS proposed a mitigation strategy of translocating the individuals to an alternative location unaffected by the Project. SunWater will fund the collection, transport and monitoring of the translocation site.

The area of known and potential habitat lost by inundation has been estimated as 2.4 ha.

SunWater intends delivering an offset which satisfies relevant objectives of the Recovery Plan for the species. This will be achieved by protecting at least 16 ha of downstream riparian habitat including at least three known sites of occupation (**Figure 6**). The areas will be protected by voluntary conservation agreement or as designated Nature Refuges.

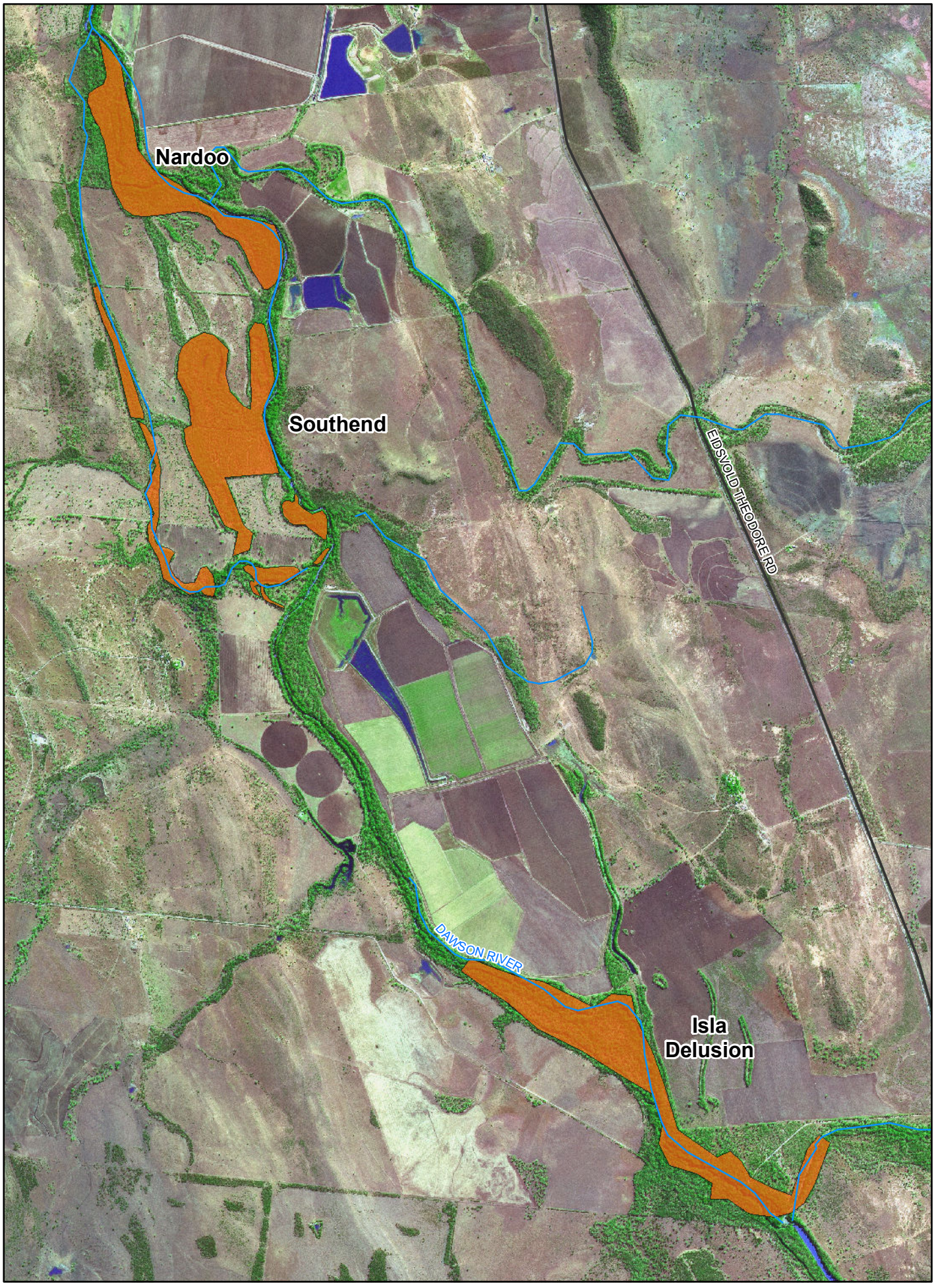
This habitat and the security of the species will also be improved through weed, pest and stock management (where that is an issue) as these are threats identified in the Recovery Plan. SunWater will fund the implementation of the management plans for a period of 10 years.

2.4 Squatter Pigeon

The Squatter Pigeon (*Geophaps scripta scripta*, vulnerable) occupies a variety of habitats and remains common in heavily-grazed country north of the Tropic of Capricorn (TSSC, 2008). The Squatter Pigeon was observed in grassy woodlands adjacent to waterways within the water storage area, and also in disturbed habitats with permanent watering points (around Mt Rose homestead) outside the water storage area. Clearing of the dam construction footprint and water storage area will result in the loss of 3,306 ha of suitable habitat for the Squatter Pigeon. This is unlikely to significantly impact on the Squatter Pigeon as they readily traverse open and disturbed areas in response to seasonal conditions and access to water, and are likely to continue to use existing habitat surrounding the water storage (e.g. Spring Creek Station). Considering the total area of remnant vegetation to be cleared or inundated by the water storage / dam is 3,582 ha, it shows the breadth of habitat considered suitable for the species.

It is SunWater's intention that as much as possible of the replacement habitat is contiguous and located on Spring Creek property, the rehabilitated wildlife corridor, the water storage buffer zone and otherwise co-located with other areas of offset as the habitats are suited to Squatter Pidgeon. At the completion of construction, approximately 9,550 ha of flood buffer will be established above FSL. The flood buffer will be established as an easement to be owned and managed by SunWater. This area will in part be used to mitigate environmental impacts of the Project and potentially provide environmental offsets. The flood buffer area is currently predominantly cleared grazing land with patches of remnant vegetation and regrowth. Certain development within the flood buffer will be allowed, but development will be restricted in areas set aside for environmental purposes. Such development could include designated paths for cattle to access the dam water or for pumps and waterlines. Environmental offsets may be obtained in consultation with the landowner, but these will not form part of the standard easement agreement. Offset areas and mitigation areas will provide protection of remnant vegetation, restoration of non-remnant vegetation via natural re-generation and re-vegetation of critical areas. In this configuration the buffer zone will offer substantial wildlife habitat and potentially be of benefit as a movement corridor, though incomplete.

The proposed wildlife corridor will commence on Spring Creek property where a large expanse of primarily remnant habitat abuts both Precipice National Park and the State reserve riparian to the Dawson River (1LE60). It will then use existing remnant vegetation, non-remnant areas that will be managed as offsets and rehabilitation areas that will be infilled, to establish a wildlife movement corridor between Spring Creek and the Boggomoss and Mt Rose nature refuges. It will then use primarily offset areas for brigalow and springs (via extension to the existing nature refuges) to link to Lot 4031 SP212959, a Defined Forest Area of State Land to the north. The total area of habitat included has not yet been confirmed.



LEGEND

- Watercourse
- Main Roads
- Areas within which Habitat Critical to the survival of the species exists

Projection: GDA94 Zone 56

Figure 6

0 250 500 1,000 1,500

Meters

Scale 1:50,000 (at A4)

N

SKM SunWater Making Water Work

ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Areas of Potential Offset for Boggomoss Snail Habitat Impact

Path: I:\QENV2\Projects\QE06601\QE06601 280 SpatialArcGIS\Figures\Final\Additional Information to the Nathan Dam EIS\160811_Figure6_AreasOfPotentialOffsetForBoggomossSnailHabitatImpact.mxd Produced: 11/08/2016

2.5 Other relevant species

The Project also has the potential to impact on a number of threatened species that have been assessed as likely or possible occurrences within the Project area. The level of impact for each species was assessed as not significant. However, the proposed Project rehabilitation and offset strategies will be of direct benefit to these species. A number of these species have been recorded within or are considered likely to occur within the Spring Creek area of the proposed wildlife corridor (e.g. Brigalow Scaly foot, Yakka skink, Large-eared pied bat, South-eastern long eared bat, Northern quoll).

2.6 Summary of EPBC Act offset plan

The plan will include protection and management of:

- 745 ha of Brigalow EC;
- Purchase of, or protection via appropriate conservation agreement, at least 15 ha of land containing EPBC listed spring communities. Priority will be given to (in descending order) spring complexes in Boggomoss, Dawson River 6, Price Creek, Cockatoo Creek and Dawson River 8;
- Development and implementation of management plans for the Spring protected area/s that specifically relate to threats identified in the Recovery plan (cattle grazing, weeds, fire) and for the purpose of maintaining or improving the conservation rating of the springs;
- Purchase of, or protection via appropriate conservation agreement, at least 16 ha of known Boggomoss Snail habitat across at least 3 locations;
- Development and implementation of management plans for the Boggomoss Snail protected area/s that specifically relate to threats identified in the Recovery plan (cattle grazing, fire, weeds and feral animals);
- Nearly 10,000 ha of habitat for Squatter pigeon within the water storage buffer zone, wildlife corridor, spring offset areas and brigalow offset areas; and
- Re-establishment of an east-west wildlife corridor linking patches of remnant and rehabilitated vegetation.

3 Queensland State Offsets

It is proposed to seek a Community Infrastructure Designation (CID) for the project and as a result the clearing of native vegetation would not be assessable development under the *Sustainable Planning Act 2009*. Most of the prescribed matters relate to this provision so are also exempt. SunWater recognises that the residual impact on vegetation and wildlife habitat is significant but largely overlaps with the EPBC Act related impacts. However it is also recognised that the designating Minister or the Coordinator-General may require offsets related to clearing of native vegetation or other prescribed environmental matters.

Offsets which could be required without a CID are discussed below along with the recognition of where the Commonwealth has or will assess substantially the same matter.

3.1 Prescribed Activities

The Project will involve the following prescribed activities:

- Environmentally Relevant Activities (ERAs);
- Taking of a protected plant under a protected plant clearing permit granted under the *Nature Conservation (Administration) Regulation 2006*, section 15;

- Development for which an environmental offset may be required under the State Development Assessment Provisions; modules 4 (ERAs), 5 (fisheries resources), 8 (native vegetation clearing) and 11 (wetland protection).

3.2 Prescribed Environmental Matters

The prescribed environmental matters upon which the activities will impact are:

- Regulated vegetation;
- Connectivity areas;
- Wetlands;
- Protected wildlife habitat;
- Protected area; and
- Waterway providing for fish passage.

Each of the above matters is addressed below. Raw impacts are presented first followed by assessment using the Significant Residual Impact Guidelines (as appropriate) and assuming co-location of applicable offsets.

3.2.1 Regulated vegetation

Table 3 and **Figure 7** present the impacts associated with regulated vegetation. Endangered ecosystems all relate to Brigalow so are not shown on **Figure 7** as brigalow is shown on **Figure 1**.

Regional ecosystems that intersect wetland areas were identified in accordance with the definitions in the EO Regulation Schedule 2, Part 2, subsections 3a and 6.

Regional ecosystems that are within a defined distance of the defining banks of a relevant watercourse were identified using Appendix 3 of the EO Policy for watercourses in a non-coastal bioregion.

Regional ecosystems that are areas of essential habitat for endangered or vulnerable plants or animals were identified in accordance with the definitions in the EO Regulation Schedule 2, Part 2, subsection 3b. There is no essential habitat on the pipeline.

Criteria in accordance with Section 2.1 Table 1 of the Significant Residual Impact Guidelines have been used.

Table 3 Raw impact table – regulated vegetation

Regional Ecosystem	MSES Aspect	Area (ha)				
		Water Storage Area	Balancing Storage	Roads	Pipeline	Total
11.3.1	Endangered RE	61.9	0.0	0.0	0.0	61.9
11.3.2	Of Concern RE	437.8	3.5	0.0	1.2	442.5
11.3.3	Of Concern RE	1026.0	0.2	0.0	0.4	1026.6
11.3.4	Of Concern RE	165.2	3.9	0.0	0.9	170.0
11.3.22	Of Concern RE	17.0	0.0	0.0	0.0	17.0
11.9.1	Endangered RE	36.8	0.0	0.0	0.0	36.8
11.9.5	Endangered RE	24.7	0.5	0.0	0.3	25.5

Regional Ecosystem	MSES Aspect	Area (ha)				
		Water Storage Area	Balancing Storage	Roads	Pipeline	Total
11.9.5a	Endangered RE	4.5	0.1	0.0	0.0	4.6
11.9.6	Endangered RE	0.0	0.0	0.0	0.1	0.1
11.9.7	Of Concern RE	32.9	0.8	0.0	0.0	33.7
11.9.10	Of Concern RE	58.5	0.6	0.0	1.4	60.5
11.3.3	Intersects Wetland	1.6	0.0	0.0	0.0	1.6
11.3.4	Intersects Wetland	6.6	0.0	0.0	0.0	6.6
11.3.22	Intersects Wetland	3.8	0.0	0.0	0.0	3.8
11.3.25	Intersects Wetland	3.3	0.0	0.0	0.1	3.3
11.3.27	Intersects Wetland	0.2	0.0	0.0	0.0	0.2
11.10.7	Intersects Wetland	0.1	0.0	0.0	0.0	0.1
11.10.9	Intersects Wetland	3.5	0.0	0.0	0.0	3.5
11.3.3	Intersects Wetland	1.6	0.0	0.0	0.0	1.6
11.3.4	Intersects Wetland	6.6	0.0	0.0	0.0	6.6
11.3.22	Intersects Wetland	3.8	0.0	0.0	0.0	3.8
11.3.25	Intersects Wetland	3.3	0.0	0.0	0.1	3.3
11.3.27	Intersects Wetland	0.2	0.0	0.0	0.0	0.2
11.10.7	Intersects Wetland	0.1	0.0	0.0	0.0	0.1
11.10.9	Intersects Wetland	3.5	0.0	0.0	0.0	3.5
11.3.1	Defined Distance - Watercourse	11.6	0.0	0.0	0.0	11.6
11.3.2	Defined Distance - Watercourse	97.5	0.0	0.2	0.8	98.5
11.3.3	Defined Distance - Watercourse	429.0	0.0	0.2	0.1	429.4
11.3.4	Defined Distance - Watercourse	71.6	0.0	1.3	0.1	73.0
11.3.14	Defined Distance - Watercourse	0.0	0.0	0.0	1.0	1.0
11.3.19	Defined Distance - Watercourse	0.1	0.0	0.0	0.0	0.1
11.3.22	Defined Distance - Watercourse	5.4	0.0	0.0	0.0	5.4
11.3.25	Defined Distance - Watercourse	1001.0	0.0	1.0	1.3	1003.2
11.3.27	Defined Distance - Watercourse	2.3	0.0	0.0	0.0	2.3
11.3.39	Defined Distance - Watercourse	0.0	0.0	0.1	0.0	0.1

Regional Ecosystem	MSES Aspect	Area (ha)				
		Water Storage Area	Balancing Storage	Roads	Pipeline	Total
11.5.1	Defined Distance - Watercourse	0.0	0.0	0.0	0.5	0.5
11.5.4	Defined Distance - Watercourse	0.0	0.0	0.0	0.4	0.4
11.5.21	Defined Distance - Watercourse	0.0	0.0	0.0	1.2	1.2
11.7.4	Defined Distance - Watercourse	0.0	0.0	0.0	1.0	1.0
11.7.7	Defined Distance - Watercourse	0.0	0.0	0.0	0.3	0.3
11.9.1	Defined Distance - Watercourse	12.7	0.0	0.0	0.0	12.7
11.9.5	Defined Distance - Watercourse	1.8	0.0	0.0	0.1	2.0
11.9.7	Defined Distance - Watercourse	7.3	0.0	0.0	0.0	7.3
11.9.10	Defined Distance - Watercourse	6.5	0.0	0.1	0.0	6.6
11.10.7	Defined Distance - Watercourse	7.8	0.0	0.1	0.0	7.9
11.10.7a	Defined Distance - Watercourse	1.9	0.0	0.0	0.0	1.9
11.10.9	Defined Distance - Watercourse	9.7	0.0	0.1	0.0	9.8
11.3.1	Intersects Essential Habitat	1.8	0.0	0.0	0.0	1.8
11.3.2	Intersects Essential Habitat	1.1	0.0	0.0	0.0	1.1
11.3.3	Intersects Essential Habitat	11.4	0.0	0.0	0.0	11.4
11.3.4	Intersects Essential Habitat	26.4	0.0	0.1	0.0	26.5
11.3.22	Intersects Essential Habitat	2.7	0.0	0.0	0.0	2.7
11.3.25	Intersects Essential Habitat	69.8	0.0	0.0	0.0	69.8
11.9.1	Intersects Essential Habitat	2.3	0.0	0.0	0.0	2.3
11.9.5	Intersects Essential Habitat	4.3	0.0	0.0	0.0	4.3
11.9.7	Intersects Essential Habitat	5.0	0.0	0.0	0.0	5.0

Regional Ecosystem	MSES Aspect	Area (ha)				
		Water Storage Area	Balancing Storage	Roads	Pipeline	Total
11.9.10	Intersects Essential Habitat	0.2	0.0	0.4	0.0	0.6
11.10.7	Intersects Essential Habitat	5.0	0.0	0.0	0.0	5.0
11.10.9	Intersects Essential Habitat	4.2	0.0	0.0	0.0	4.2

The pipeline construction easement (not the operational easement) will be allowed to naturally regenerate the impacted ecosystem, reducing the time required to achieve an offset.

3.2.2 Connectivity areas

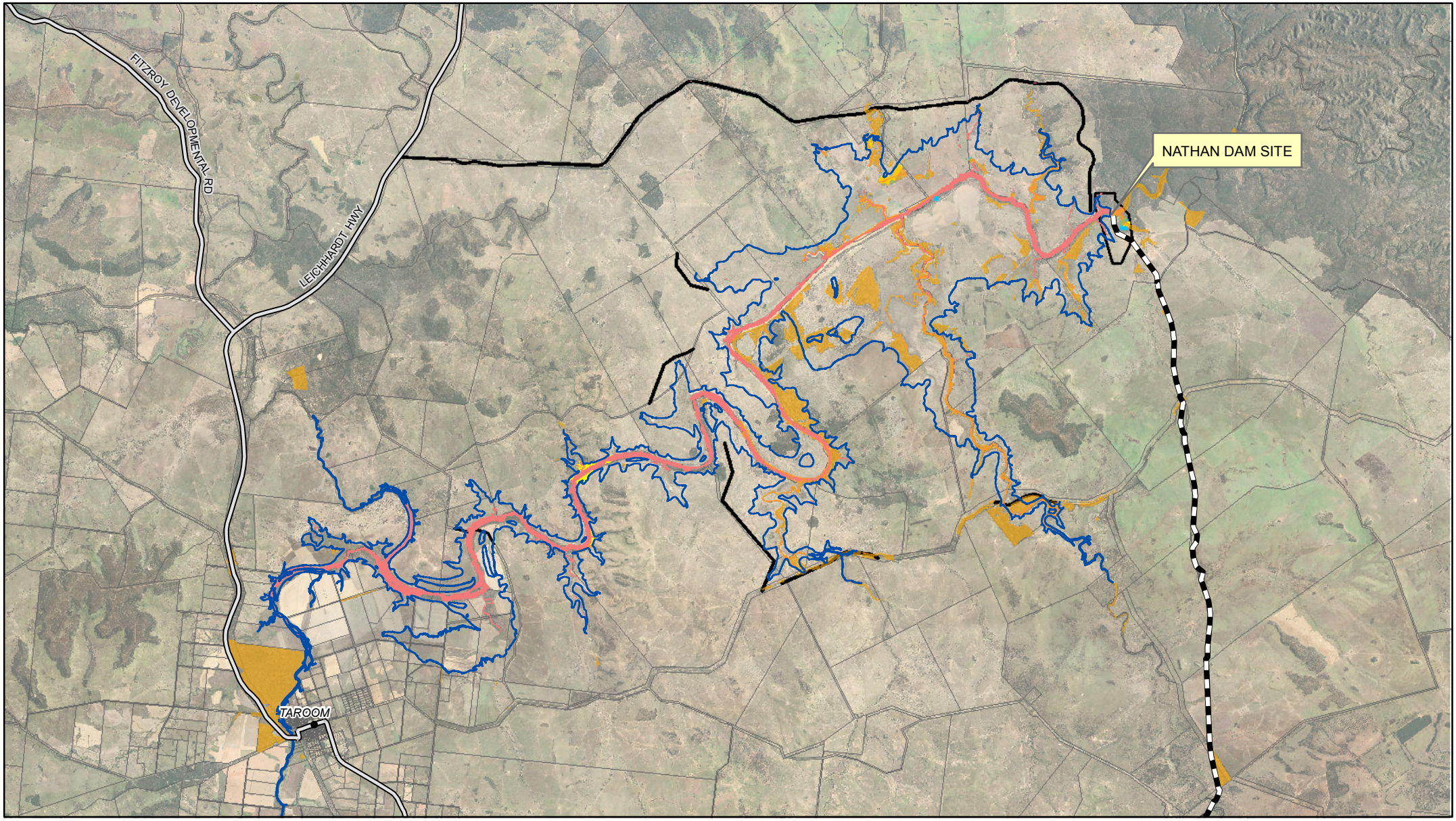
The Landscape Fragmentation and Connectivity Tool was used to quantify the project's impact on connectivity areas. This process identified the impact on core remnant ecosystem extent at the local scale as a result of the project to be 2,503.7 ha. The impact was determined as being significant. Management of the dam buffer area and the proposed northern wildlife corridor is intended to address connectivity related impacts.

3.2.3 Significant residual impact and Commonwealth consideration

3.2.3.1 Regulated vegetation

The impacted Endangered regional ecosystems entirely overlap with the EPBC Act Endangered Brigalow community so no further assessment or offset is necessary.

The communities intersecting wetlands, particularly 11.3.22 partly overlap with GAB springs though the extent of overlap has not been defined. For this and "defined distance from a watercourse" it has been assumed that if offsets were required that the "Of concern" ecosystems would be entirely overlapping.



LEGEND

- Town
- State Controlled Road
- Pipeline Route
- Full Supply Level (183.5m
- Cadastre
- Associated Infrastructure
- Of Concern Vegetation
- Vegetation intersecting with Vegetation Management Wetlands (DNRM v2.21)
- Vegetation intersecting with Vegetation Management Watercourse and Drainage Buffer (DNRM v1.4)
- Vegetation intersecting with Essential Habitat (DNRM, 2011)

Projection: GDA94 Zone 56

Figure 7

0 1 2 4
Kilometres

N

Scale 1:200,000 (at A4)

SKM SunWater Making Water Work

ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Regulated Vegetation - Dam & Surrounds

I:\QENV2\Projects\QE06601\QE06601.280 Spatial\ArcGIS\Figures\Final\Additional Information to the Nathan Dam EIS\160811_Figure7_RegulatedVegetationAtDamAndSurrounds.mxd Produced: 11/08/2016

With respect to Essential Habitat, three of the five species (*Ericaulon carsonii*, *Arthraxon hispidus* and *Paradelma orientalis*) are EPBC listed so have been afforded Commonwealth consideration. The former two are also part of the GAB spring community so have been assessed with respect to impacts on that community also. No significant residual impacts were determined for these species.

The remaining species are *Rutidosis crispata* and *Thelypteris confluens*. The Queensland Significant Residual Impact Guidelines (NC Act, which mirror the Commonwealth guidelines) provide criteria as follows: An action is likely to have a significant impact on endangered or vulnerable wildlife habitat (including Essential Habitat) if the impact on the habitat is likely to:

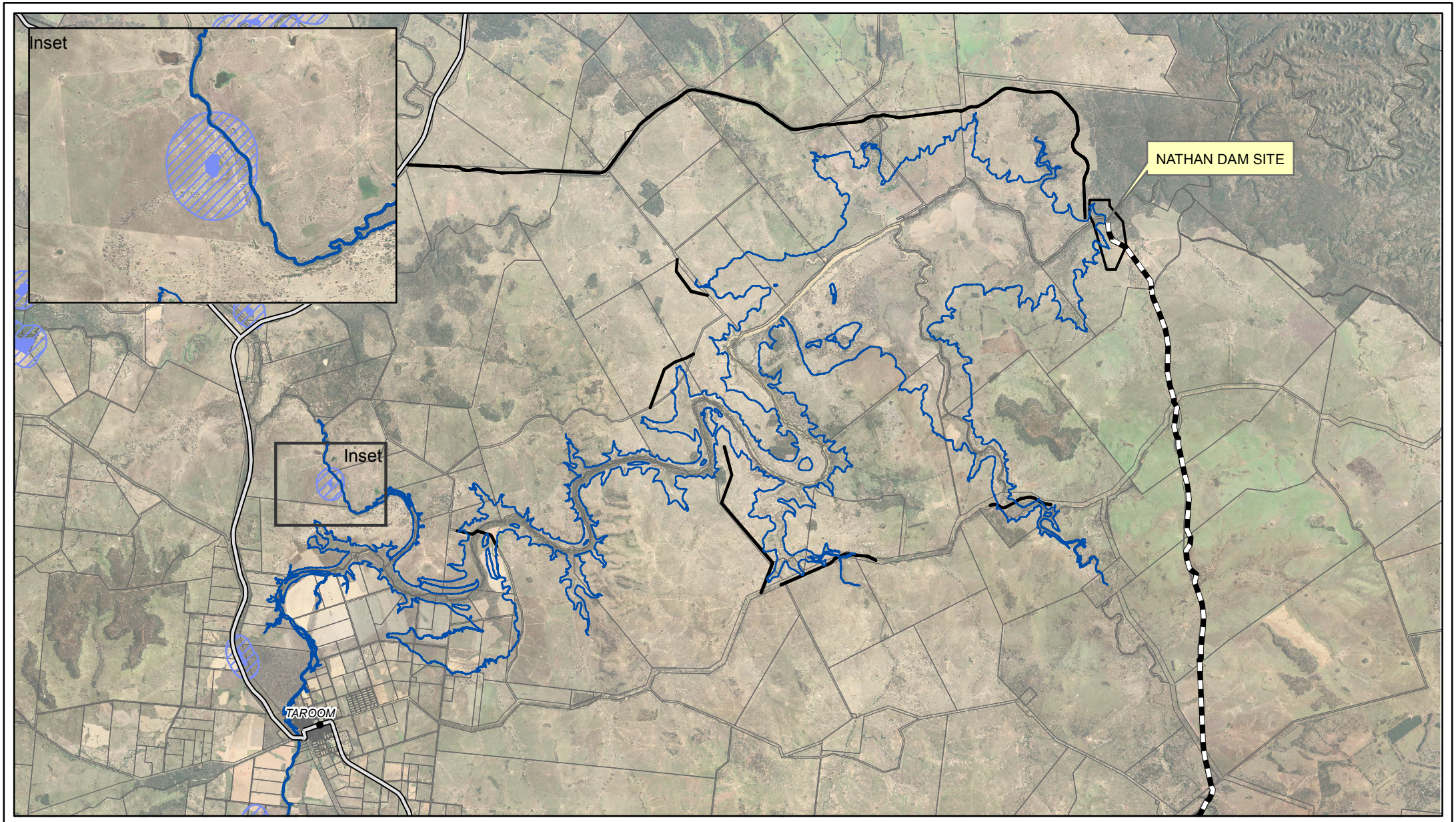
- lead to a long-term decrease in the size of a local population; or
- reduce the extent of occurrence of the species; or
- fragment an existing population; or
- result in genetically distinct populations forming as a result of habitat isolation; or
- result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat; or
- introduce disease that may cause the population to decline, or
- interfere with the recovery of the species; or
- cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species.

With respect to *Rutidosis crispata*, the EIS identified the species in two locations related to the dam inundation area. It was described as "in relative abundance on south facing sandstone slopes to the immediate west of Blackboy Creek in RE 11.10.7 and in areas directly north of this and the Dawson River in RE 11.10.9". The water storage area will impact only a small proportion of the total population, with minimal impact on the southern side of the river. As a result, none of the above outcomes is likely to occur so a significant residual impact is not predicted.

The EIS (Appendix 10B) noted that field searches for *Thelypteris confluens* yielded no results, but this did not discount their continuing presence in GAB Spring Communities from which a record existed. The Queensland springs database notes *Thelypteris confluens* as occurring at two sites in the Dawson River 6 complex and these sites are not impacted by the project. As such, no population is being impacted and there is no residual impact.

3.2.3.2 Wetlands and Watercourses

The Project does not impact on any High Ecological Significance (HES) Wetlands (i.e. Wetland Protection Areas). However, one HES wetland is located just above FSL and the FSL intersects the Trigger Area for this wetland (**Figure 8**). The area is associated with GAB listed springs (numbers 26 and 28) so is addressed under Commonwealth considerations.



LEGEND

- Town
- State Controlled Road
- Pipeline Route
- Full Supply Level (183.5m AHD)
- Cadastre
- Associated Infrastructure
- Wetland Protection Area trigger area
- Wetland Protection Area HES wetland

Projection: GDA94 Zone 56

Figure 8

0 1 2 4
Kilometres

N

Scale 1:200,000 (at A4)

SKM SunWater Making Water Work

ADDITIONAL INFORMATION TO THE NATHAN DAM EIS

Referrable Wetlands - Wetland Protection and Trigger Areas

The EO Policy notes that a wetland or watercourse in high ecological value waters is only a prescribed matter for the purposes of the following prescribed activity—a prescribed ERA under the *Environmental Protection Act 1994*. There are no high ecological value (HEV) waters within the direct impact area of any project related ERAs. The nearest HEV water downstream is HEVm2173 which is Precipice National Park. The Park abuts the western bank of the Dawson River for a short distance within Nathan Gorge and this section of river is also entirely within the water storage area of the existing Gyranda Weir (though it is not within the Park or the HEV). The Park is elevated and rugged, being part of the Gilbert Range within the Great Dividing Range. Precipice Creek is the major drainage within the park and it currently drains into the Gyranda Weir pool. Flow and water quality in the creek will not be impacted by the Project.

3.2.3.3 Protected Wildlife Habitat

Flora

The water storage impact area is within high risk areas on a flora survey trigger map and some parts have been shown by field survey to contain or potentially contain endangered or vulnerable plants or to serve as habitat for endangered, vulnerable or special least concern animals.

Several listed threatened species also triggered assessment under Essential habitat and they are discussed above.

Potential habitat for *Acacia curranii* (vulnerable) was noted. *Acacia curranii* is also EPBC Act listed (vulnerable) and impacts were assessed as not significant so no offset was required.

Gonocarpus urceolatus was previously listed as vulnerable but this was changed in 2012 (post-EIS) to Least concern. It was considered likely to occur on the pipeline route though was not found during field surveys and has not been recorded directly within the pipeline corridor.

For threatened species which may occur, the process below will be followed.

A qualified botanist will undertake pre-construction surveys of known and potential habitat to assess the size/condition/structure of known populations or confirm the presence or absence of likely species. The surveys will be in accordance with the Flora Survey guidelines – protected plants (EHP 2014). These will occur sufficiently in advance of construction so that potential impact management measures can feasibly be implemented if required. For any confirmed populations of threatened species, impact management measures will be implemented as follows and in accordance with the Protected Plants Assessment Guideline (EPH 2014):

- review the design to see if the extent of impact can be reduced (for example by changing the location of the pipeline);
- determine if the age and condition of individuals present will allow successful translocation (Section 10);
- determine if seed collection and nursery propagation is feasible;
- if 2 and/or 3 are possible, design rehabilitation plans to incorporate the species; and
- determine the viability of the species in the wild.

SunWater anticipates that impacts of clearing for the pipeline will be sufficiently mitigated by rehabilitation of the construction easement via the process outlined above (hence will include threatened species if originally present).

If the process above determines that offsets for some species are required, the potential overlap with EPBC offsets will first be assessed prior to the offset being finalised.

Fauna

No endangered NC Regulation listed fauna are known from the project impact area. The EIS noted a Grey Snake (*Hemiaspis damelii*, endangered) as potentially identified on Glebe Road from a road kill specimen, but it has since been confirmed that this specimen was not a Grey Snake. Hence this species is now classified as Likely to occur rather than Known to occur. The Vulnerable Squatter Pigeon - Southern (*Geophaps scripta scripta*) was recorded from the dam area. Other vulnerable fauna which were considered likely to occur were:

- *Paradelma orientalis* (Brigalow Scalyfoot), and
- *Jalmenus eubulus* (Imperial Hairstreak Butterfly (northern subspecies).

Squatter Pigeon and Brigalow Scalyfoot are also EPBC Act listed and the requirement for offset for Squatter Pigeon is discussed above. Significant impact on Brigalow Scalyfoot was not considered likely and no offset was required.

With respect to Imperial Hairstreak the EIS noted "There are a couple of small patches of essential habitat for the Imperial Hairstreak located in the dam study area, east of Taroom". It also noted that the Brigalow Invertebrate Site provided significant habitat for the species. These were not in the actual area of impact and the species was not observed during field studies. As the larvae feeds exclusively on Brigalow the EIS concluded that mitigation related to Brigalow would result in any impact not being significant and offsets for Brigalow would benefit the species. Similarly none of the significant residual impact guideline criteria would likely be breached.

Special least concern (non-migratory) animal wildlife habitat

During EIS fauna surveys two Koala (*Phascolarctos cinereus*) were observed near Cockatoo Creek outside the area of impact. In later studies a single Koala was observed near the dam construction site and both aged and recent scratches and scats were observed in the same area of riparian woodland. Sightings of aged Koala scratches and scats upstream of the dam wall indicated infrequent, passing use by individual Koalas that are using the wider area.

Large areas of habitat suitable for Koalas occur immediately downstream of the dam water storage area forming a relatively intact area of vegetation and habitat along the Great Dividing Range which includes the property Spring Creek and Precipice National Park. The construction site for the dam wall will be situated at the extreme western fringe of this habitat and will not significantly impact its quality. Moving upstream from the construction area and away from the Great Dividing Range, the farming areas provide fragmented potential habitat which is in generally poor condition due to cattle grazing, selective clearing, fire disturbance, edge effects, weed incursion and feral animals.

The riparian corridors within the water storage area are generally thin and in poor condition, and are unlikely to be essential for dispersal or movement of Koalas. The corridor represented by the Dawson River is fragmented, with Biodiversity Planning Assessments showing a gap of several kilometres in the length occupied by the present Glebe Weir pool.

Platypus (*Ornithorhynchus anatinus*) was not recorded during field surveys and there are no database or other confirmed records of it in the area. Anecdotal evidence from landowners suggests that platypus occur in the Dawson River and tributaries in the Taroom region upstream of the project area. Platypus is known to successfully inhabit highly modified systems, including dams.

Short beaked echidna (*Tachyglossus aculeatus*) has been historically recorded in the impact area and was found at two sites during field surveys. The Short-beaked Echidna is found throughout Australia, including Tasmania and lives in

forests and woodlands, heath, grasslands, arid environments, agricultural areas and urban outskirts. It is regarded as the most widespread Australian native animal and is not listed as threatened. The most common threats to the animal are cats, dingoes and cars (Wildlife Preservation Society of Queensland website). In Australia, the number of short-beaked echidnas has been less affected by land clearance than have some other species, since they do not require a specialized habitat beyond a good supply of ants and termites. As a result, they can survive in cleared land if the cut-down wood is left in the area, as the logs can be used as shelters and sources of insects.

Given the information above, despite the loss of habitat resulting from inundation and construction, none of the outcomes noted in the significant residual impact guidelines would be anticipated, particularly given SunWater's commitment to develop a wildlife corridor to the north of the dam, to salvage large woody debris for use in habitat restoration and to manage large parts of the water storage buffer for environmental purposes. No further offset is suggested as necessary.

3.2.3.4 Protected Areas

Mount Rose Nature Refuge is Lot 18 on LE279 and has an area of 105 ha, of which approximately 0.7 ha would be inundated by the dam at FSL. Section 8(5) of the EO Act determines that Section 8(2) does not apply to Nature Refuges so "inundation" is not a relevant factor. However Section 8(1) still applies so an assessment of the significance of impact must be undertaken. The EO Policy notes that impact in protected areas may relate to the loss of values that have environmental significance, and / or the loss of the associated 'public benefit' values, such as access, open space, tourism, recreation and cultural pursuits. The Conservation Agreement for the reserve nominates a mound spring and RE11.3.22 as the protected significant values. No mound spring and no RE11.3.22 will be impacted as a result of the Project. As such SunWater suggests that the management intent of the reserve will not be affected.

As part of the requirement to offset GAB springs (which are RE 11.3.22) SunWater proposes an extension of the area protected as Nature Refuge. Greatest benefit is achieved by extending the adjoining Boggomoss Nature Refuge as this can protect mound springs and vegetation suited for incorporation into the Wildlife corridor. The multiplier suggested in Section 3.1.3 of the Offset Policy for a nature refuge is between 2 and 5 and the area included within proposed actions will far exceed that multiplier if it was thought an offset was required.

3.2.3.5 Waterway providing for fish passage

Significant Residual Impact (SRI) Criteria for this prescribed environmental matter are described in the DSDIP guideline (2014) as below.

"An action is **likely** to have a SRI on a waterway providing for fish passage if the action will result in:

a) a permanent modification to the volume, depth, timing, duration or flow frequency of the waterway;

b) permanent modification or fragmentation of fish habitat including but not limited to in stream vegetation, snags and woody debris, substrate, bank or riffle formation necessary for breeding and/or survival of native fish species;

c) the mortality or injury of fish species; **or**

d) works that permanently reduce the level of fish passage provided in a tidal waterway or a waterway identified as a major high risk waterway for waterway barrier works, to a level that would increase stress on fish populations.

Notwithstanding the above, an action is **unlikely** to have a SRI on a waterway providing for fish passage if:

a) measures have been put in place to provide equal or better fish passage for the waterway during construction and operation activities; **and**

b) the waterway is restored to its existing condition immediately on completion of the works; **or**

c) for works that permanently alter existing fish passage, equal or better passage will be provided immediately on completion of the works."

Temporary or permanent waterway barriers related to roadworks or temporary construction works will satisfy the criteria for an unlikely significant residual impact however the dam wall and resultant water storage area will not. In Section 13.8 of the AEIS SunWater suggested that it is very difficult to quantify the residual impact but committed to investigating fish passage at the downstream Gyranda Weir, which is a significant financial commitment. SunWater suggests no further specific offset for fisheries habitat is necessary.

3.3 Offset availability

As discussed above, most of the residual impact on vegetation and wildlife habitat overlaps with the EPBC Act related impacts and will therefore be addressed as part of the EPBC Act offset plan. The offset plan includes potential environmental offsets within the flood buffer area above FSL and the proposed wildlife corridor between Spring Creek and the Boggomoss and Mt Rose nature refuges. As discussed in **Section 2.4**, environmental offsets may be obtained in consultation with the land owner. Offset areas and mitigation areas will provide protection of remnant vegetation, restoration of non-remnant vegetation via natural re-generation and re-vegetation of critical areas.

The previous assessment of offset availability undertaken by Aurecon in July 2013 also identified areas that could be suitable for State offsets. SunWater will update this previous assessment using current spatial data prior to the Coordinator General's Evaluation report being finalised for the project. This assessment will seek to identify suitable offset areas for each MSES subject to an offset. Potential offsets for the connectivity areas will be based on the impact area calculated for the core remnant ecosystem extent at the local scale.

4 General

Areas included within the overall offset strategy will be protected from conflicting uses, through weed and feral animal control, fire management and management of stocking rates and/or periodic exclusion of cattle.

To improve the condition and capacity of habitat included within the offset strategy or otherwise surrounding the impact area, relocation of fauna habitat features will be undertaken prior to commencement of construction. This will include stags, hollow limbs and fallen timber to improve roosting, nesting and feeding habitat availability.

Spring Creek and Mt Rose properties (amongst others) have already been purchased for the Project (and leased back to the original owner) and include areas of remnant and non-remnant habitat which suit the majority of species impacted or potentially impacted by the project.

Some areas suggested as offsets for EPBC listed springs (or threatened species that are or may be associated with them) are not on land parcels which will be impacted by the project so SunWater may seek the Coordinator-General's assistance with acquiring tenure over those locations if its own negotiations are not successful.

4.1.1 Offset Broker

SunWater intends using an Offset Broker to deliver the offsets and all approval processes related to the appointment of that broker will be duly executed.