Our Ref: GRDBFMIS/201008LDPIE

8 October 2020

401 | 171 Clarence Street
SYDNEY NSW 2000
PO Box 1778
SYDNEY NSW 2001
[redacted]

Steve Hartley
Executive Director, Biodiversity & Sustainability
Department of Planning, Industry & Environment
GPO Box 39,
Sydney NSW 2001

ATTENTION: STEVE HARTLEY

Dear Steve,

RE: DRAFT CUMBERLAND PLAIN CONSERVATION PLAN SUBMISSION – LEPPINGTON PASTORAL COMPANY LANDHOLDING

1. Introduction

This submission has been prepared on behalf of Leppington Pastoral Company (LPC). LPC own a [redacted] ha land parcel at [redacted] Bringelly comprising 4 titles as listed below (Refer Figure 1):

[redacted]

The property has been utilised for grazing and dairying activities for several decades and has a number of major improvements being sheds, stockyards, houses that are part of the dairying operation undertaken by Leppington Pastoral Company (Refer Figure 1).

2. Background

On the 29 October 2019 a meeting was convened by Laura Torrible and Maddy Humphreys from the Department of Planning, Industry and Environment (DPIE) to update representatives from Leppington Pastoral Company on the progress in relation to the background investigations to support the Draft Cumberland Plain Conservation Plan (CPCP) that DPIE is undertaking as proponents under NSW and Commonwealth Biodiversity Legislation.

As part of the discussion, it was outlined that there were areas shown on the mapping along the realignment of The Northern Road where land is currently leased by RMS, which would revert to LPC once the road works were complete. It was also noted that the Department of Planning had not undertaken a detailed stream assessment to determine whether they displayed the attributes of a 'river', 'lake' or 'waterfront land' under the Water Management Act 2000 through field survey and observation (Refer Figure 2).

At this meeting the DPIE officers pointed out that any information which would assist them in finalising the mapping for the LPC landholding at Bringelly would be welcomed ahead of exhibition and that it was timely if the information could be provided to DPIE to assist with finalising the CPCP. Furthermore, it was agreed by the Department that if further details of the lease were provided and an assessment of the streams was undertaken by a specialist consultant on behalf of the landowner, their findings and the lease information would be accepted by the Department and included within the finalised Draft CPCP in preparation of exhibition.

Figure 1: Property Boundary of Leppington Pastoral Company's Bringelly Landholding

To this end, a letter was sent to the Department addressed to Steve Hartley on the 19 November 2020 providing the information discussed at the meeting of the 29 October 2019 (Refer Attachment 1).

When interrogating the information and mapping available as part of the CPCP package currently on exhibition, the mapping appears not to have changed from what was presented at the 29 October 2020 meeting. Figure 2 below shows the CPCP mapping for the subject site.

Figure 2: CPCP Mapping by the Department of Planning, Industry & Environment

3. Lease Arrangement

It appears from the mapping available on the DPIE website relating to the CPCP still contains the land that is the subject of a temporary lease by the Roads and Maritime Services for their works to re-aligned The Northern Road reservation. Accompanying our correspondence of the 19 November 2019 (Refer Attachment 1) is a copy of the executed '*Land Required for Temporary road works: Construction Lease – Agreement for Lease of Land to the Roads and Maritime Services'* document.

The documentation outlines that the term of the lease is for an initial term of (6) months from the commencement date and thereafter from month to month, for the purposes of undertaking temporary "road works". Specifically clause (vii) states as follows:

> *"(vii) At the expiry of RMS's requirements for the lease, RMS shall surrender up to the landlord the demised land in a clean and tidy condition."*

It is noted when reviewing the CPCP mapping, that this land remains excluded from the 'Certified – Urban Capable' category.

We respectfully requested that this land be reviewed and be removed from the category of 'Excluded' and included into the 'Certified – Urban Capable' category.

4. Stream Classification

As part of the work undertaken to support our correspondence of the 19 November 2019, Gunninah (F Dominic Fanning) was engaged to review the stream classifications and presence, or otherwise, of 'rivers', 'lakes' or 'waterfront land' under the *Water Management Act 2000* definition for the subject site. Gunninah's report which accompanied our correspondence is included for referenced at Attachment 1.

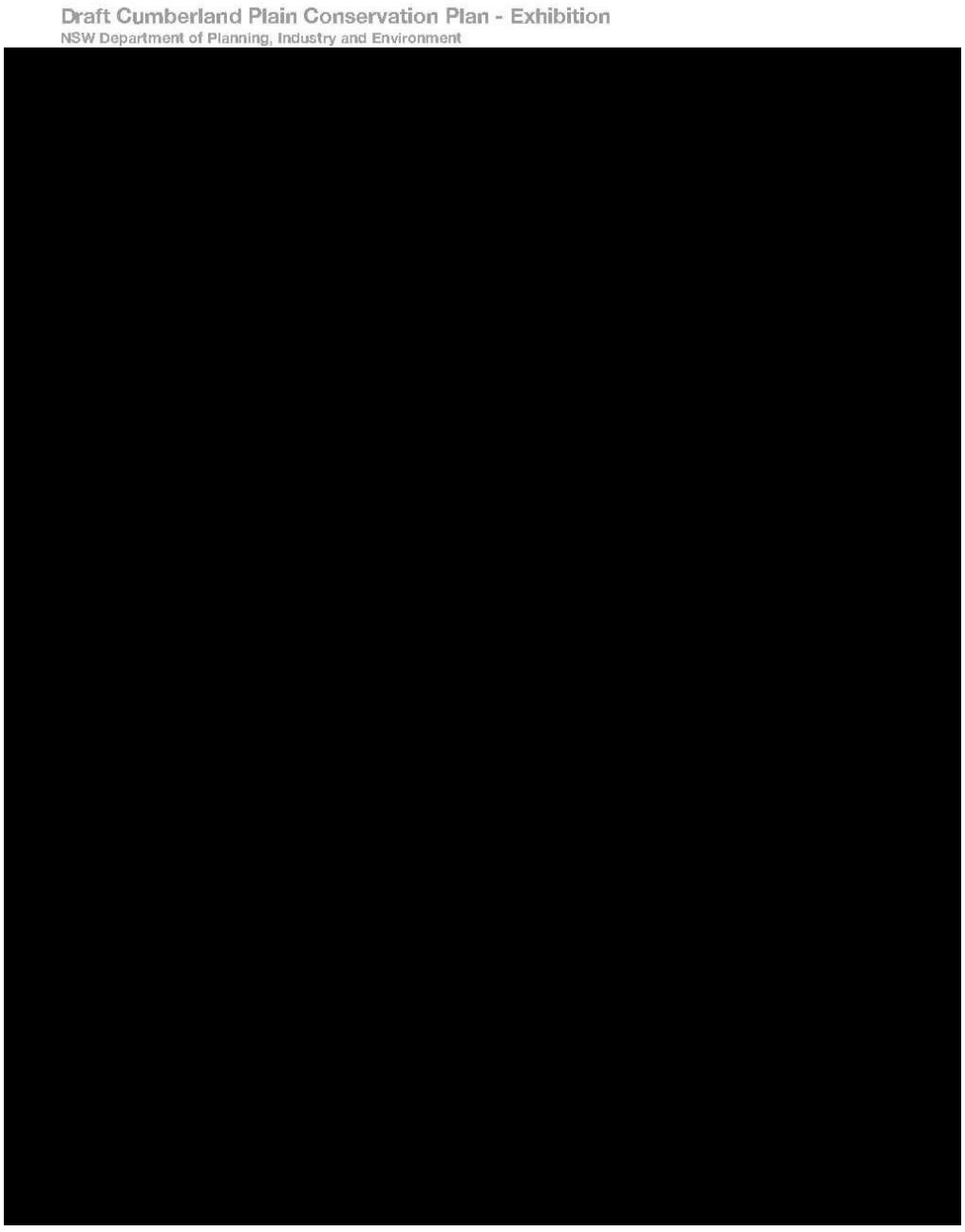
The Gunninah work in November 2019 was based on ground-truthing of the mapped 'streams' and concluded that most of the Hydroline 'Streams' mapped on the subject site do not constitute 'rivers' as defined under the *Water Management Act 2000* and do not possess a 'bed' or a 'highest bank', nor do they constitute a 'natural channel or a 'natural channel artificially improved'. Furthermore, Gunninah conclude that the subject site is predominantly of very low biodiversity or conservation value due to the long history of extensive and intensive agricultural use and that the only biodiversity values are restricted to relatively small sections of the larger watercourses on the subject site.

Subsequent to the exhibition of the CPCP, Gunninah were engaged to review their previous work and provide an updated report (Refer Attachment 2). The outcome of this work is quoted as follows:

> *"***8.3 Proposed Environmental Conservation**
>
> The proposed *Environmental Zoning* of the subject land contained in the 'Plan Viewer' (Figure 3; Attachment A) is based in part on the incorrect and/or inappropriate mapping identified above.
>
> As a consequence, some of the proposed *Environmental Zoning* of the subject land is regarded by the undersigned as inappropriate; particularly as that zoning constitutes a prohibition on development of those lands (for other than "*environmental protection works or flood mitigation works*").
>
> ***8.4 Outcomes***
>
> *It is to be further noted that to achieve the environmental (riparian) outcomes identified in the proposed* Environmental Zoning *of the subject land would require significant costs for earthworks and revegetation rehabilitation of essentially all of the proposed E2 lands.*
>
> *In particular, those portions of the Non-Certified - Other (*ie *riparian) lands which are currently farm dams will require substantial rehabilitation works and substantial expense. These would then be artificial watercourses.*
>
> ***9 Discussion – Conservation Plan***
> *A substantial number of the 'streams' identified by the Hydroline mapping on Base Farm at Bringelly do not meet the requirements for "*rivers" *as defined in the* Water Management Act 2000*. These 'streams' do not therefore have any associated "waterfront land"; and do not constitute any impediment to the future urban development potential of these parts of Base Farm.*
>
> *Further, where there are "rivers" present on the subject site, they are of lower Strahler Orders than indicated on the Hydroline mapping (as documented above).*
>
> *The Base Farm is predominantly of very low biodiversity or conservation value - given the long history of extensive and intensive agricultural use of the property. Biodiversity values currently are restricted to relatively small sections of the larger watercourses on the subject site - Streams F12, G1, G3, G6, G7 and G9 (in the south) and Streams K5, K7, K10, K11 and K12 (in the north)."*

Figure 2 illustrates the watercourses/streams present on the subject site that constitute 'rivers' (or at lease maybe).

Figure 2: Gunninah Stream Survey Results



5. Conclusion

As identified, by the Department and supported by work undertaken by Gunninah (F Dominic Fanning), it is agreed that the majority of the subject site has little biodiversity value.

The CPCP mapping as presented by the Department at our meeting and subsequently release on public exhibition appears to not have changed, even though on-site detailed investigation work had been undertaken by Gunninah and demonstration that the lease arrangement with RMS is a temporary situation for the purpose of constructing the newly re-aligned The Northern Road. At the completion of these works, the RMS will relinquish the lease land and deliver it back to the landowner.

We now respectfully request that the information provided during our discussion of the 29 October 2019, in combination with in our previous letter of the 19 November 2019 and the information included in this submission be taken into account by DPIE in finalising the CPCP, with the majority of the site being represented as 'Certified – Urban Capable' as illustrated in Figure 3 below:

Figure 3: Biodiversity Representation for LPC Landholding at Bringelly

Should you wish to discuss any aspect of this correspondence, please feel free to contact me directly.

Yours faithfully
DESIGN+PLANNING

NIGEL McANDREW
DIRECTOR

ATTACHMENT 1 – DESIGN+PLANNING CORRESPONDENCE (19 NOVEMBER 2019)

Our Ref: GRDBFMIS/191119LDPIE

19 November 2019

401 | 171 Clarence Street
SYDNEY NSW 2000
PO Box 1778
SYDNEY NSW 2001
P: (02) 9290 3636
E: admin@designandplanning.com.au

Steve Hartley
Executive Director, Biodiversity & Sustainability
Department of Planning, Industry & Environment
GPO Box 39,
Sydney NSW 2001

ATTENTION: STEVE HARTLEY

Dear Steve,

RE: CUMBERLAND PLAIN CONSERVATION PLAN – LEPPINGTON PASTORAL COMPANY LANDHOLDING IN BRINGELLY

1. Introduction

I refer to the meeting on the 29 October 2019 at which yourself, Laura Torrible and Maddy Humphreys presented the progress of your work to the landowner representatives from Leppington Pastoral Company in relation to the background investigations to support the Cumberland Plain Conservation Plan (CPCP), that you and your team are progressing as proponents under NSW and Commonwealth Biodiversity Legislation.

We would like to take the opportunity on behalf of Leppington Pastoral Company Pty Ltd to thank you for the opportunity to meet and gain an overview understanding of the work that has been undertaken, in particular the biodiversity assessment that has occurred for the Leppington Pastoral Company (LPC) landholdings at Bringelly (the subject site).

2. Cumberland Plain Conservation Plan Mapping

During our meeting the mapping for the LPC landholdings was shown to the landowner representatives and myself which illustrated three (3) categories over their land:

- Pink - Urban Capable.
- Blue - Non-certified / excluded from development.
- Yellow - Excluded from development.

Based on the mapping presented at the meeting, we have reproduced the mapping outputs as illustrated in Figure 1.

As part of the discussion, it was outlined that the areas shown as yellow, along the realignment of The Northern Road, where land is currently leased by RMS, would revert to LPC once the road works were complete. It was also noted that the Department of Planning had not undertaken a detailed stream assessment to determine whether they displayed the attributes of a ‘river’, ‘lake’ or ‘waterfront land’ under the Water Management Act 2000 through field survey and observation.

Figure 1: Reproduction of CPCP findings by the Department of Planning, Industry & Environment

To this end, it was agreed by the Department that if further details of the lease were provided and an assessment of the streams was undertaken by a specialist consultant by the landowner, their findings and the lease information would be accepted by the Department and included within the work being undertaken in finalising the CPCP, hence showing the majority of the landholding as being 'urban capable' (Refer Figure 2).

3. Lease Arrangement

The land adjacent to the re-aligned The Northern Road reservation has been temporarily leased by RMS for the purpose of constructing the new The Northern Road. Attachment 1 is a copy of the executed '*Land Required for Temporary road works: Construction Lease – Agreement for Lease of Land to the Roads and Maritime Services'* document.

The documentation outlines that the term of the lease is for an initial term of (6) months from the commencement date and thereafter from month to month, for the purposes of undertaking temporary "road works". Specifically clause (vii) states as follows:

> *"(vii) At the expiry of RMS's requirements for the lease, RMS shall surrender up to the landlord the demised land in a clean and tidy condition."*

To this end, the attached documentation is evidence that the land will revert to LPC and therefore should be included in the CPCP work being undertaken by your team and represented as 'Urban Capable'.

4. Stream Classification

Gunninah (F Dominic Fanning) was engaged to review the stream classifications and presence, or otherwise, of 'rivers', 'lakes' or 'waterfront land' under the *Water Management Act 2000* definition for the subject site. Gunninah's report is referenced at Attachment 2.

Gunninah has undertaken ground-truthing of a number of the mapped 'streams' and concludes that most of the Hydroline 'Streams' mapped on the subject site do not constitute 'rivers' as defined under the *Water Management Act 2000* and do not possess a 'bed' or a 'highest bank', nor do they constitute a 'natural channel or a 'natural channel artificially improved'. Furthermore, Gunninah conclude that the subject site is predominantly of very low biodiversity or conservation value due to the long history of extensive and intensive agricultural use and that the only biodiversity values are restricted to relatively small sections of the larger watercourses on the subject site.

Figure 2 illustrates the watercourses/streams present on the subject site that constitute 'rivers' (or at lease maybe).

Figure 2: Gunninah Stream Survey Results

5. Conclusion

As identified, by the Department and supported by work undertaken by Gunninah (F Dominic Fanning), the majority of the subject site has little biodiversity value. The mapping as presented by the Department at our meeting, with the consideration of the additional investigation work by Gunninah, illustrates that most of the site has urban capability under the definitions established by your work on the CPCP.

Furthermore, as outlined by this letter and the supporting information attached, there are areas adjacent to the new The Northern Road which are the subject of a temporary lease by RMS for the purpose of constructing the newly re-aligned The Northern Road. At the completion of these works, the RMS will relinquish the lease land and deliver it back to the landowner.

We now respectfully request that the information provided in this letter be incorporated into the work being undertaken by your team in finalising the CPCP, with the majority of the site being represented as 'urban capable' as illustrated in Figure 3 below:

Figure 3: Biodiversity Representation for LPC Landholding at Bringelly

Should you wish to discuss any aspect of this correspondence, please feel free to contact me directly.

Yours faithfully
DESIGN+PLANNING

NIGEL McANDREW
DIRECTOR

ATTACHMENT 1 – RMS / LPC LEASE DOCUMENTATION

LAND REQUIRED FOR TEMPORARY ROAD WORKS: CONSTRUCTION LEASE

AGREEMENT FOR LEASE OF LAND TO THE ROADS AND MARITIME SERVICES

AGREEMENT made the 8 day of OCTOBER Two Thousand and Eighteen

BETWEEN LEPPINGTON PASTORAL CO PTY LIMITED (hereinafter called the 'Landlord') **AND ROADS AND MARITIME SERVICES** (hereinafter called 'RMS').

WITNESSETH that the Landlord lets and RMS takes the land (demised land) in the Schedule hereto for an initial term of (6) six months from the commencement date and thereafter from month to month, at a rental of [redacted] per month inclusive of GST, payable on demand, for the purposes of undertaking temporary "road work" (as defined by the Roads Act 1993) (the works), subject to the following conditions:-

(i) The landlord agrees to the shed straddled by the acquisition boundary shown by blue outline in the RMS sketch plan SR4523 (Amended 11/01/2017) – Sheet 1 attached hereto to be demolished and removed by RMS, its employees, agents or contractors.

(ii) RMS shall within a minimum of 14 days prior to taking occupation of the land, advise the Landlord in writing of the proposed commencement date of the lease term, which shall be the date from which RMS has the right to take possession of the land;

(iii) If the property is required to be occupied by RMS for a period longer than (6) six months, the rental for the balance of the period of occupation will be paid monthly in advance, with the final month's rent to be adjusted to the date of termination on a daily pro-rata basis;

(iv) the Landlord to pay rates and taxes;

(v) prior to the commencement of works, RMS by its employees, agents or contractors to secure the Landlord's property in the area of the works as shown on the attached plan and to relocate any improvements, utilities and fencing as required;

(vi) RMS indemnifies the Landlord during the term of this lease from all claims, demands, actions, proceedings, losses and damages of every kind whether in tort or otherwise resulting from any accident, damage or injury occurring on the demised land which may arise in connection with it or its agents occupation of the land except where such accident damage or injury is caused or contributed to by any negligence or wilful default on the part of the Landlord or the Landlord's employees.

(vii) At the expiry of RMS's requirements for the lease, RMS shall surrender up to the landlord the demised land in a clean and tidy condition.

(viii) Should the Landlord sell the property prior to or during the term of the subject lease or any carryover period, the Landlord agrees to disclose to the purchaser the subject lease to RMS, and will ensure the sale is made subject to the lease to RMS.

ROADS AND MARITIME SERVICES

THE SCHEDULE:

AS SHOWN BY BLUE OUTLINE ON THE ATTACHED COPY OF RMS SKETCH PLAN SR4523 (AMENDED 11/01/2017) – SHEET 1.

SIGNED by the Landlords: .....[redacted].....

Leppington Pastoral Co Pty Limited

In the presence of: .....[redacted].....

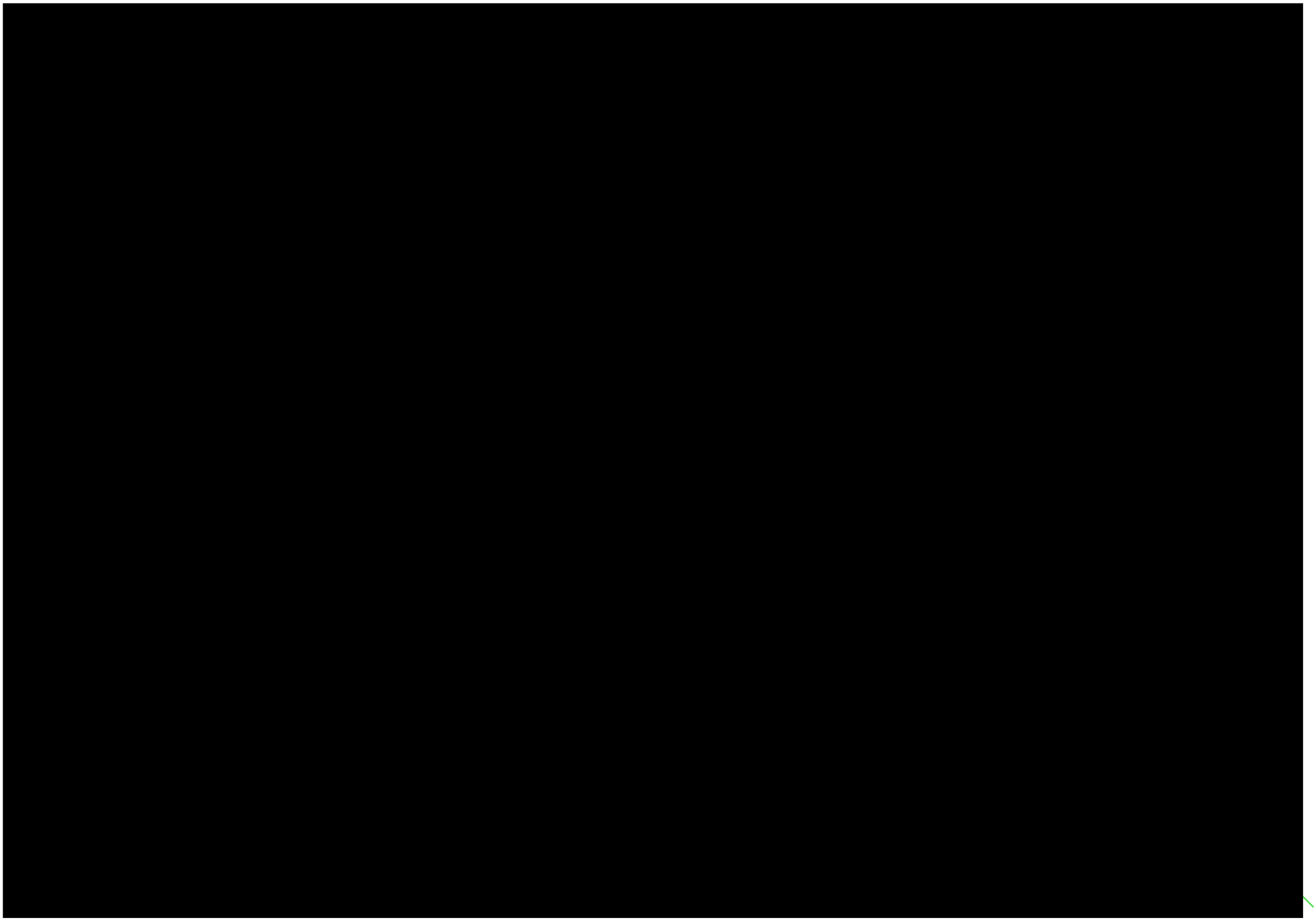
Witness

SIGNED by
RMS: .....[redacted].....

Roads and Maritime Services

In the presence of: .....[redacted].....

Witness



[redacted]

[redacted]

DP1092165 THE NORTHERN ROAD

[redacted]

[redacted]

ATTACHMENT 2 – GUNNINAH (F DOMINIC FANNING) REPORT

gunninah

Base Farm
[redacted] Bringelly

Stream and Biodiversity Analysis

F Dominic Fanning - Gunninah

November 2019

gunninah

BASE FARM
[redacted] BRINGELLY

STREAM and BIODIVERSITY ANALYSIS

F Dominic Fanning

November 2019

1 PRELIMINARY NOTES

1.1 Introduction

The *Water Management Act 2000* (WM Act) and the *Water Management (General) Regulation 2018* (the '*Regulation*') provide the relevant definitions and mechanisms for implementation of the Act.

The WM Act, relevantly for the Base Farm site at Bringelly, provides definitions for the terms "*river*", "*lake*" and "*waterfront land*"; as discussed below.

The *Regulation* identifies the Hydroline[1] mapping and the Strahler system of stream classification; although it is noted that the Hydroline mapping is not mandated by any Section of the Act or by any Clause of the Regulation. Nor is it identified in the NRAR[2] *Guidelines for Controlled Activities on Waterfront Land 2018*.

The defining element of the WM Act and the *Regulation* is "*waterfront land*".

This is because the requirement for a *Controlled Activity Approval* (CAA) pursuant to the WM Act is determined by the undertaking of a relevant "*activity*" (as defined in the *Dictionary* in the Act) "*in, on or under waterfront land*" – Section 91(2) (see definition and discussion below).

In other words, a CAA is only required when a proposal proposes to undertake "*a specified controlled activity at a specified location in, on or under waterfront land*" – Section 91(2). The correct identification of "*waterfront land*" is therefore critical to the decision-making process (noting that the NRAR *Guidelines* identify the 'recommended' widths of Riparian Zones for the different Stream Orders on the land).

1 The *Water Management (General) Regulation 2018 Hydro Line Spatial Data* dataset of mapped watercourses and waterbodies in NSW. It is based on the Spatial Services (Department of Finance, Services & Innovation) NSW Hydro Line dataset. It is to be noted that the Hydroline mapping is **not** accurate or reliable; and has in most locations not been ground-truthed.

2 The Natural Resources Access Regulator (NRAR) was formerly known as the NSW Office of Water (NOW) and the Department of Primary Industries – Water (DPI Water).

1.2 WM Act Definitions and Relevance

Waterfront Land

As noted above, "*waterfront land*" is the most important element of the WM Act and the *Regulation*, and determines the application of the NRAR *Guidelines*.

Relevantly for the purposes of the Base Farm at Bringelly, the WM Act defines "*waterfront land*" with respect to "*rivers*" as follows (emphases added) -

> "*the **bed** of any river, **together with** any land lying between **the bed of the river** and a line drawn parallel to, and the prescribed distance inland of, **the highest bank of the river***".

Thus – for "*waterfront land*" to be present at any location, there must be a "*river*"; relevantly defined by the features of a "*bed*" and a "*highest bank*". Absent those features, there is no "*river*"; and there is therefore no "*waterfront land*".

The "*prescribed distance*" is defined in the WM Act as (relevantly) "*40 metres*". It is noted that this distance is the 'trigger' for implementation of the Act (per the NRAR *Guidelines for Controlled Activities on Waterfront Land 2018*). It is not the distance over which any riparian setbacks and/or management actions prescribed in the Act and/or by the NRAR are to apply.

Activities on "*waterfront land*" (*ie* within 40m of the "*highest bank*" of a "*river*") require a *Controlled Activity Approval* (CAA) from the NRAR pursuant to Section 91(2) of the WM Act.

River

The WM Act describes a "*river*", relevantly, as follows (emphases added) -

> "*any watercourse, whether perennial or intermittent and whether comprising a natural **channel** or a natural **channel** artificially improved …*".

Thus – for a "*river*" to be present, there must be a "*natural channel or a natural channel artificially improved*" on the land. As noted above "*waterfront land*" is also defined by a "*river*" having the features of a "*bed*" and a "*highest bank*". Absent those features, there is no "*river*".

Lake

The WM Act describes a "*river*", relevantly, as follows (emphases added) -

> "*any collection of still water, whether perennial or intermittent and whether natural or artificial*".

Notwithstanding that very broad definition (which theoretically would include a child's wading pool in a suburban back yard), isolated farm dams are not regarded as "*lakes*" for the purposes of the WM Act - **unless** there is a "*river*" entering the dam and a "*river*" leaving the dam (J Morice NRAR *pers comm*). In those circumstances, the dam would assume the Strahler system rating of the associated "*rivers*".

It is noted for the purposes of this *Report*, that the farm dams present on Base Farm are not a matter of particular concern or interest; other than with respect to the potential stream ratings of the "*rivers*" that are 'flowing' through them in a few instances. The future of the farm dams will be a relevant matter at the time of creating concept plans and designs for the future urban development of the land.

2 STREAM SYSTEMS on BASE FARM

There are four main stream systems which have been identified to the undersigned as of particular interest with respect to the determination of future urban development potential of the Base Farm land.

The four Stream Systems are identified in the accompanying map as Stream Systems 'A', 'C', 'D' and 'F'; and are located in the eastern parts of the Base Farm (see map in Attachment A).

The relevant issue is what is the correct Strahler stratification of the Hydroline mapped 'streams'[3] on the Base Farm site and/or which of the Hydroline mapped 'streams' do not constitute "*rivers*" as defined in the WM Act.

This task was undertaken by conducting a ground-truthing survey of a number of the mapped 'streams' – taking photographs of various 'stream' lengths and determining whether or not there was a "*natural channel or a natural channel artificially improved*" present on the land, including a "*bed*" and a "*highest bank*". The results are provided below; with a photographic essay in Attachment B.

3 ANALYSIS of STREAMS

3.1 Stream System 'A'

Stream A1

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream A2

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream A3

- Upper parts (above the small farm dam) – no channel; shallow swale through the paddock
- Lower parts (below the small farm dam) – some areas of eroded 'swale'
- Not a "*river*"

3.2 Stream System 'B'

Stream B1

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream B2

- No stream of any sort at this location
- No channel - shallow swale through paddock

3 The term "*stream*" is not defined in either the WM Act or the *Regulation*.

3.3 Stream System 'C'

Stream C1

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C2

- Upper parts (above Stream C3) – no channel; shallow swale through the paddock
- Lower parts (below Stream C3 immediately upstream of road) – some areas of eroded 'swale'
- Not a "*river*"

Stream C3

- Not surveyed but not likely to be a stream of any sort at this location

Stream C4

- No channel - shallow swale through dense Kikuyu
- Not a "*river*"
- Portion within the farm dam would not likely to have been a "*river*"

Stream C5

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C6

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C7

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C8

- Not surveyed but not likely to be a stream of any sort at this location

Stream C9

- Not surveyed but not likely to be a stream of any sort at this location

Stream C10

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C11

- Not surveyed but not likely to be a stream of any sort at this location

Stream C12

- No channel - shallow swale through paddock and no channel downstream of the road
- Not a "*river*" and not likely to have been a "*river*" prior to recent disturbance (even if it was it would have been a 1st Order Stream)

Stream C13

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C14

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream C15

- Within the farm dam - would not likely to have been a "*river*"; but could potentially have been a 1st Order stream

Stream C16

- Within the farm dam - would not likely to have been a "*river*"; but could potentially have been a 1st Order stream

3.4 Stream System 'D'

Stream D1

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D2

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D3

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D4

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream D5

- Within the farm dam - would not likely to have been a "*river*"
- The lower parts (now within the main farm dam) could potentially have been a 1st Order stream

Stream D6

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream D7

- Within the farm dam - could potentially have been a 1st Order stream

3.5 Stream System 'F'

Stream F1

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F2

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F3

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F4

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F5

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F6

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F7

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F8

- No stream of any sort at this location

Stream F9

- No stream of any sort at this location

Stream F10

- No stream of any sort at this location
- There is an excavated channel along the edge of the road on the northern side

Stream F11

- No stream of any sort at this location

Stream F12

- This stream (downstream of the road) is clearly a "*river*"
- However, as there are no "*rivers*" upstream of Stream F12, this is a 1st Order stream

4 RIVERS on BASE FARM

Most of the Hydroline 'Streams' mapped on the Base Farm at Bringelly do not constitute "*rivers*" as defined in the *Water Management Act 2000*. These 'Streams' do not possess a "*bed*" or a "*highest bank*"; nor do they constitute a "*natural channel or a natural channel artificially improved*".

As "*waterfront land*" is defined (relevantly for the purposes of this *Report*) by the presence of a "*river*", the only "*waterfront land*" on the Base Farm at Bringelly occurs along those stretches of 'Streams' identified below as "*rivers*" (see Figure on following page and in Attachment A).

The only watercourses/streams present on the Base Farm at Bringelly that constitute "*rivers*" are (or at least may be) the following.

- Streams F12, G1, G2, G3, G6, G8 and G10.
- Streams K5, K7, K10 (?), K11 and K12 (?).
- Streams D7, C15, C16, L1, L2, L3, L4, L5, L6, L7 and L8 (although all of these are beneath the waters of farm dams on the site).

5 DISCUSSION

A substantial number of the 'streams' identified by the Hydroline mapping on the Base Farm at Bringelly do not meet the requirements for "*rivers*" as defined in the *Water Management Act 2000*. These 'streams' do not therefore have any associated "*waterfront land*"; and do not constitute any impediment to the future urban development potential of these parts of the Base Farm.

Further, where there are "*rivers*" present on the subject site, they are of lower Strahler Orders than indicated on the Hydroline mapping (as documented above).

The Base Farm is predominantly of very low biodiversity or conservation value – given the long history of extensive and intensive agricultural use of the property. Biodiversity values are restricted to relatively small sections of the larger watercourses on the subject site - Streams F12, G1, G2, G6, G8 and G10 (in the south) and Streams K5, K7, K10, K11 and K12 (in the north).

F Dominic Fanning
Gunninah

[redacted]

gunninah

Base Farm
[redacted] Bringelly

Stream and Biodiversity Analysis

Attachment A
Relevant Plans and Maps

F Dominic Fanning - Gunninah

November 2019

[redacted]

[redacted]

[redacted]

gunninah

Base Farm
[redacted] Bringelly

Stream and Biodiversity Analysis

Attachment B
Photographic Essay

F Dominic Fanning - Gunninah

November 2019

Stream **A1**

Stream **A2**

Looking upstream

Looking downstream

Stream **A3 (1)**

Upper reaches

Stream **A3 (2)**

Middle reaches (near farm dam)

Stream **A3 (2)**

Lower reaches (near roadworks)

Stream **C2**

Lower part upstream of access road – eroded swale through paddock

Stream **C4**

Upper part immediately downstream of access road

Central part downstream of access road (looking upstream)

Central part downstream of access road (looking downstream towards large dam)

Lower part looking upstream

Lower part looking upstream showing main flow

Lower part looking downstream showing main flow

Stream **C5 and C6**

Streams C5 and C6 immediately above the road

Stream **C10**

No watercourse of any sort at this location

Streams **C14 and C15**

Just above the dam and below the road

View upstream of the dam through which Stream C15 ‘flows’

Streams **D1, D2 and D3**

View through dam ‘containing’ Streams D1, D2 and D3

View through dam approximately along the alignment of the non-existent Stream D2

Streams **D4 and D5**

Stream D4 is located to the left of the trees – but there is no stream of any kind in this location

The dam containing the lower part of Stream D3 as well as Stream D5

Streams **D5 Plus**

The lower part of Stream D5 and then Stream D7 below the dam wall entering the main dam. These may have been 1st Order streams prior to the earthworks.

Streams on the opposite bank of the main dam - J5 (below the dwelling), J6 (centre) and J7, J8 and J9 (right of picture). None of these are "*rivers*".

Streams L4 and L5 are located in the centre of the main dam – left to right. These are likely to have been "*rivers*" prior to construction of the dam.

Streams **F1, F2 and F3**

Streams F1 and F2 – shallow swales; no "*rivers*"

Stream F3 – a shallow swale; not a "*river*"

Streams **F6 and F7**

Stream F6 – shallow swale; not a “*river*”

Stream F7 – shallow swale; not a “*river*”

Streams **F10 and F11**

Looking upstream along Stream F10 – shallow swale; not a "*river*"

Looking upstream along Stream F11 – shallow swale; not a "*river*"

Stream **F12**

Looking downstream along Stream F12 – a "*river*"

Where Stream F11 enters the main dam on the Base Farm

ATTACHMENT 2 – GUNNINAH (F DOMINIC FANNING) REPORT DATED SEPTEMBER 2020

gunninah

Base Farm
[redacted] Bringelly

Stream and Biodiversity Values Analysis
and
Draft Cumberland Plain Conservation Plan

F Dominic Fanning

September 2020

gunninah

Base Farm
[redacted] Bringelly

Stream and Biodiversity Values Analysis
and
Draft Cumberland Plain Conservation Plan

F Dominic Fanning

September 2020

BASE FARM
1675 THE NORTHERN ROAD, BRINGELLY

STREAM and BIODIVERSITY VALUES ANALYSIS and DRAFT CUMBERLAND PLAIN CONSERVATION PLAN

F Dominic Fanning

September 2020

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DRAFT CUMBERLAND PLAIN CONSERVATION PLAN

F Dominic Fanning

September 2020

PART A INTRODUCTION

1 THE SUBJECT LAND

The "*subject land*" for the purposes of this *Report* consists of three portions of land at Bringelly – Lot[redacted]

The subject land is known as Base Farm; which has been used and managed as a functioning farm involving substantial levels of grazing by cattle; extensive ploughing, fertilising, cropping and pasture improvement; the construction of significant farm buildings and other infrastructure; and the construction of a number of significant farm dams (see Figure 1; Attachment A).

2 SCOPE of THIS REPORT

This Report has been prepared by the undersigned to document a 'Streams Analysis' of the watercourses on the subject land as identified in the Hydroline mapping of the site (Figure 1; Attachment A).

The mapped Hydroline watercourses have been inspected and assessed with regard to the definition of "*rivers*" contained in the *Water Management Act 2000* (WM Act) and the *Water Management (General) Regulation 2018* (the '*Regulation*') – see discussion in Chapters 4 to 7.

The *Report* also addresses the application of the *Draft Cumberland Plain Conservation Plan* (the 'Plan') as documented in the *Draft Cumberland Plain Conservation Plan Viewer* (the 'Plan Viewer'); as detailed in Chapters 8 and 9.

3 INFORMATION BASE

The undersigned has visited the Base Farm (on 14 November 2019 and on 17 September 2020) – to inspect all parts of the land and to obtain photographs of most of the watercourses identified by the Hydroline mapping.

4 PRELIMINARY NOTES

4.1 Introduction

The *Water Management Act 2000* (WM Act) and the *Water Management (General) Regulation 2018* (the '*Regulation*') provide the relevant definitions and mechanisms for implementation of the Act.

The WM Act, relevantly for the Base Farm site at Bringelly, provides definitions for the terms "*river*", "*lake*" and "*waterfront land*"; as discussed below.

The *Regulation* identifies the Hydroline[1] mapping and the Strahler system of stream classification; although it is noted that the Hydroline mapping is not mandated by any Section of the Act or by any Clause of the Regulation. Nor is it identified in the NRAR[2] *Guidelines for Controlled Activities on Waterfront Land 2018*.

The defining element of the WM Act and the *Regulation* is "*waterfront land*".

This is because the requirement for a *Controlled Activity Approval* (CAA) pursuant to the WM Act is determined by the undertaking of a relevant "*activity*" (as defined in the *Dictionary* in the Act) "*in, on or under waterfront land*" – Section 91(2) (see definition and discussion below).

In other words, a CAA is only required when a proposal proposes to undertake "*a specified controlled activity at a specified location in, on or under waterfront land*" – Section 91(2). The correct identification of "*waterfront land*" is therefore critical to the decision-making process (noting that the NRAR *Guidelines* identify the 'recommended' widths of Riparian Zones for the different Stream Orders on the land).

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1 The *Water Management (General) Regulation 2018 Hydro Line Spatial Data* dataset of mapped watercourses and waterbodies in NSW is based on the Spatial Services (Department of Finance, Services & Innovation) NSW Hydro Line dataset. It is to be noted that the Hydroline mapping is **not** accurate or reliable; and has in most locations not been ground-truthed.

2 The Natural Resources Access Regulator (NRAR) was formerly known as the NSW Office of Water (NOW) and the Department of Primary Industries – Water (DPI Water).

4.2 WM Act Definitions and Relevance

Waterfront Land

As noted above, "*waterfront land*" is the most important element of the WM Act and the *Regulation*, and determines the application of the NRAR *Guidelines*.

Relevantly for the purposes of the Base Farm at Bringelly, the WM Act defines "*waterfront land*" with respect to "*rivers*" as follows (emphases added) -

> "*the **bed** of any river, **together with** any land lying between **the bed of the river** and a line drawn parallel to, and the prescribed distance inland of, **the highest bank of the river***".

Thus – for "*waterfront land*" to be present at any location, there must be a "*river*"; relevantly defined by the features of a "*bed*" and a "*highest bank*". Absent those features, there is no "*river*"; and there is therefore no "*waterfront land*".

The "*prescribed distance*" is defined in the WM Act as (relevantly) "*40 metres*". It is noted that this distance is the 'trigger' for implementation of the Act (per the NRAR *Guidelines for Controlled Activities on Waterfront Land 2018*). It is not the distance over which any riparian setbacks and/or management actions prescribed in the Act and/or by the NRAR are to apply.

Activities on "*waterfront land*" (*ie* within 40m of the "*highest bank*" of a "*river*") require a *Controlled Activity Approval* (CAA) from the NRAR pursuant to Section 91(2) of the WM Act.

River

The WM Act describes a "*river*", relevantly, as follows (emphases added) -

> "*any watercourse, whether perennial or intermittent and whether comprising a natural **channel** or a natural **channel** artificially improved …*".

Thus – for a "*river*" to be present, there must be a "*natural channel or a natural channel artificially improved*" on the land. As noted above "*waterfront land*" is also defined by a "*river*" having the features of a "*bed*" and a "*highest bank*". Absent those features, there is no "*river*".

Lake

The WM Act describes a "*river*", relevantly, as follows (emphases added) -

> "*any collection of still water, whether perennial or intermittent and whether natural or artificial*".

Notwithstanding that very broad definition (which theoretically would include a child's wading pool in a suburban back yard), isolated farm dams are not regarded as "*lakes*" for the purposes of the WM Act - **unless** there is a "*river*" entering the dam and a "*river*" leaving the dam (J Morice NRAR *pers comm*). In those circumstances, the dam would assume the Strahler system rating of the associated "*rivers*".

It is noted for the purposes of this *Report*, that the farm dams present on Base Farm are not a matter of particular concern or interest; other than with respect to the potential stream ratings of the "*rivers*" that are 'flowing' through them in a few instances. The future of the farm dams will be a relevant matter at the time of creating concept plans and designs for the future urban development of the land.

5 STREAM SYSTEMS on BASE FARM

There are eleven stream systems or groups of streams which have been identified by the Hydroline mapping of the Base Farm land site (Figure 1; Attachment A).

The relevant issue is what is the correct Strahler stratification of the Hydroline mapped 'streams'[3] on the Base Farm site and/or which of the Hydroline mapped 'streams' do not constitute "*rivers*" as defined in the WM Act.

This task was undertaken by conducting a ground-truthing survey of a number of the mapped 'streams' – taking photographs of various 'stream' lengths and determining whether or not there was a "*natural channel or a natural channel artificially improved*" present on the land, including a "*bed*" and a "*highest bank*". The results are provided below; with a photographic essay in Attachments B, C and D.

6 STREAMS ANALYSIS

6.1 Stream System 'A'

Stream A1

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream A2

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream A3

- Upper parts (above the small farm dam) – no channel; shallow swale through ploughed paddock
- Lower parts (below the small farm dam) – some areas of eroded 'swale'
- Not a "*river*"

6.2 Stream System 'B'

Stream B1

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream B2

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

[3] The term "*stream*" is not defined in either the WM Act or the *Regulation*.

6.3 Stream System 'C'

Stream C1

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C2

- Upper parts (above Stream C3) – no channel; shallow swale through ploughed paddock
- Lower parts (below Stream C3 immediately upstream of road) – some areas of eroded 'swale'
- Not a "*river*"

Stream C3

- Not surveyed but not likely to be a stream of any sort at this location

Stream C4

- No channel - shallow swale through dense Kikuyu
- Not a "*river*"
- Portion within the farm dam would not likely to have been a "*river*"

Stream C5

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C6

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C7

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C8

- Not surveyed but not likely to be a stream of any sort at this location

Stream C9

- Not surveyed but not likely to be a stream of any sort at this location

Stream C10

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C11

- Not surveyed but not likely to be a stream of any sort at this location

Stream C12

- No channel - shallow swale through paddock and no channel downstream of the road
- Not a "*river*" and not likely to have been a "*river*" prior to recent disturbance (even if it was it would have been a 1st Order Stream)

Stream C13

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C14

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream C15

- Within the farm dam - would not likely to have been a "*river*"; but could potentially have been a 1st Order stream

Stream C16

- Within the farm dam - would not likely to have been a "*river*"; but could potentially have been a 1st Order stream

6.4 Stream System 'D'

Stream D1

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D2

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D3

- No stream of any sort at this location
- Any previous 'stream' (a) has long been consumed by the dams and earthworks at this location and (b) would not likely have constituted a "*river*" in any case (given the contours)

Stream D4

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream D5

- Within the farm dam - would not likely to have been a "*river*"
- The lower parts (now within the main farm dam) could potentially have been a 1st Order stream

Stream D6

- No stream of any sort at this location
- No channel - shallow swale through ploughed paddock

Stream D7

- Within the farm dam - could potentially have been a 1st Order stream

6.5 Stream System ‘E’

Stream E1

- No stream of any sort at this location
- Shallow swale through ploughed paddock

Stream E2

- No stream of any sort at this location
- Shallow swale through ploughed paddock

Stream E3

- Only a broad shallow swale; with trees on each side
- Not a “*river*”

6.6 Stream System ‘F’

Stream F1

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F2

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F3

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F4

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F5

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F6

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F7

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F8

- No stream of any sort at this location

Stream F9

- No stream of any sort at this location

Stream F10

- No stream of any sort at this location
- There is an excavated channel along the edge of the road on the northern side

Stream F11

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream F12

- This stream (downstream of the road) is clearly a "*river*"
- However, as there are no "*rivers*" upstream of Stream F12, this is a 1st Order stream

6.7 Stream System 'G'

Stream G1

- A "*river*" with associated narrow band of woodland
- Moderate weed infestation

Stream G2

- A degraded "*river*" with moderate to high weed infestation

Stream G3

- A "*river*" with associated narrow band of woodland
- Moderate weed infestation

Stream G4

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream G5

- No stream of any sort at this location
- No channel - shallow swale through paddock

Stream G6

- A "*river*" with associated moderate band of woodland
- Moderate weed infestation

Stream G7

- A "*river*" with limited vegetation

Stream G8

- A small 'pool' at the lower end (near G9)
- Most of Stream G9 is not a "*river*"; but a swale

Stream G9

- Most of Stream G8 is contained within the farm dam

Stream G10

- Not surveyed but not likely to be a stream of any sort at this location

6.8 Stream System 'H'

Stream H1

- No stream of any sort at this location

Stream H2

- No stream of any sort at this location

Stream H3

- No stream of any sort at this location
- Merely a shallow drainage swale with scattered trees

6.9 Stream System 'J'

Stream J1

- No channel – merely a shallow swale with a few trees

Stream J2

- No channel – merely a shallow swale with a few trees

Stream J3

- No channel – merely a shallow swale with no trees

Stream J4

- No stream present
- Stream J4 is located within the farm dam

Stream J5

- No channel - shallow swale through paddock at best
- No native vegetation

Stream J6

- No channel - shallow swale through paddock at best
- No native vegetation

Stream J7

- No channel - shallow swale through paddock for most of its length
- Lower part located within the farm dam

Stream F8

- No channel – merely a shallow swale with a few trees

Stream J9

- No channel – merely a shallow swale with a few trees

Stream J10

- No stream present
- Stream J10 is located within the farm dam

6.10 Stream System 'K'

Stream K1

- A "*river*" with associated narrow band of woodland with moderate weed infestation

Stream K2

- No stream of any sort at this location

Stream K3

- A "*river*" with associated narrow band of woodland with moderate weed infestation

Stream K4

- Upper part – no bed or banks but associated band of trees
- Lower part - no channel through paddock

Stream K5

- A "*river*" with associated moderate band of woodland with moderate weed infestation

Stream K6

- No channel - shallow swale through paddock for most of its length

Stream K7

- A "*river*" with associated moderate band of woodland with moderate weed infestation

Stream K8

- No channel - shallow swale through paddock for most of its length

Stream K9

- A modified minor drainage line with trees with some erosion and weed infestation

Stream K10

- A "*river*" with associated moderate band of woodland with moderate weed infestation

Stream K11

- A "*river*" with associated moderate band of woodland with high levels of weed infestation

Stream K12

- No stream of any sort at this location

6.11 Stream System 'L'

Streams L1 to L8

- All of these stretches of stream are located within the main farm dam on the subject land

7 RIVERS on BASE FARM

Most of the Hydroline 'streams' mapped on the Base Farm at Bringelly do not meet the requirements for "*rivers*" as defined in the *Water Management Act 2000*. These 'streams' do not possess a "*bed*" or a "*highest bank*"; nor do they constitute a "*natural channel or a natural channel artificially improved*". They do not therefore have any associated "*waterfront land*"; and they do not constitute any impediment to the future urban development potential of these parts of the Base Farm.

Further, where there are "*rivers*" present on the subject site, they are of lower Strahler Orders than indicated on the Hydroline mapping (as documented above).

As "*waterfront land*" is defined (relevantly for the purposes of this *Report*) by the presence of a "*river*", the only "*waterfront land*" on the Base Farm at Bringelly occurs along those stretches of 'streams' identified below as "*rivers*" (see Figure 1; Attachment A).

The only watercourses/streams present on the Base Farm at Bringelly that do or appear to constitute "*rivers*" are the following.

- Streams F12, G1, G2, G3, G6, G7 and G9 - at the upper (southern) end of the property.
- Streams K1, K3, K5, K7, K10, K11 and K12 - at the lower (northern) end of the property.

These are also the only streams that retain any significant biodiversity or conservation value; retaining some (albeit often weed infested) native vegetation.

It is noted that a number of the Hydroline 'streams' identified on the Base Farm site as well as the lower parts of other mapped 'streams' are located beneath the waters of farm dams on the site.

- Streams C15, C16, D5, D7, J10, L1 to L8 (all of which are located within the farm dams).
- Streams C4, C5, C6, C13, C14, D4, D5, D6, E3, F12, G9, L1 to L8 (the lower parts of which are located within the farm dams).

This review of the *Draft Cumberland Plain Conservation Plan* (the 'Plan') has been prepared by the undersigned at the request of the owners of the Base Farm at Bringelly in the western suburbs of Sydney (see Figure 1 above).

8 ISSUES

8.1 Mapping

The *Draft Cumberland Plain Conservation Plan Viewer* (the 'Plan Viewer') provides mapping of watercourses ('riparian') on the subject land – identified as ribbons of 'Non-Certified – Other' lands along watercourses through the Base Farm.

However, most of the mapped watercourses (Figure 1; Attachment A) are of minimal value in riparian or ecological terms – many are located within existing farm dams; several contain little or no native vegetation; and some are regularly ploughed and have no current ecological value.

8.2 Non-Certified Land Mapping

Given the inaccuracies in the base mapping of watercourses identified above, the mapping of 'Non-Certified – Other' contained in the 'Plan Viewer' (Figure 2; Attachment A) is in part inappropriate. As noted above, several portions of the 'Non-Certified – Other' areas on the subject land are currently of no ecological value; and possess no relevant biodiversity values.

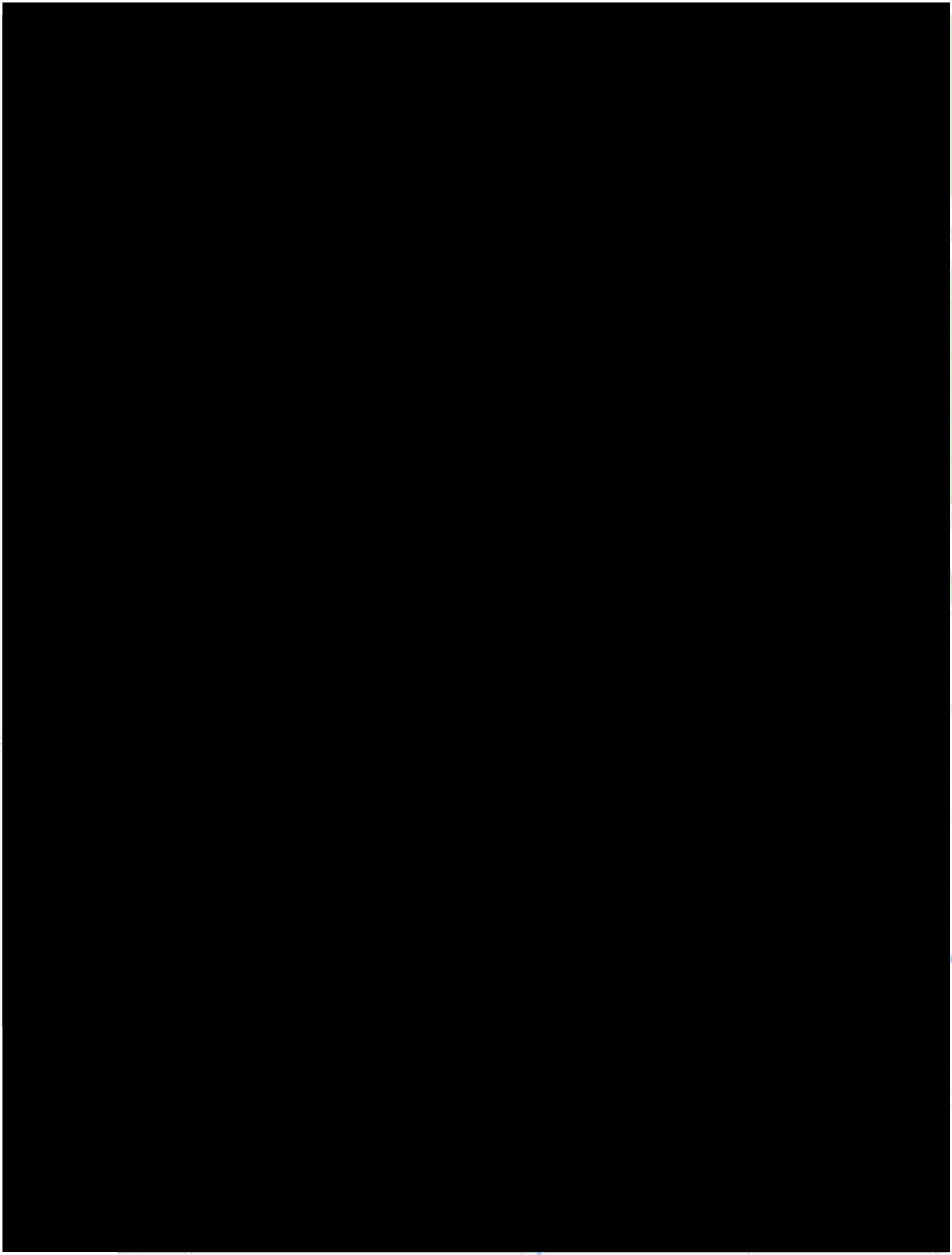
In particular, several of watercourses identified in the 'Plan Viewer' (Figure 2; Attachment A) are of no riparian or ecological value – being either minor swales through often ploughed paddocks or being located in farm dams and thereby possessing no current ecological or riparian values (see Table on following page).

Even the main watercourse through the subject land (Duncans Creek) is contained mostly within the main farm dam; and will need to be reconstructed and replanted to achieve any riparian and/or ecological values.

In particular, the following 'streams' do not warrant being designated as 'Non-Certified – Other' – given their highly degraded and/or modified condition (see Table below).

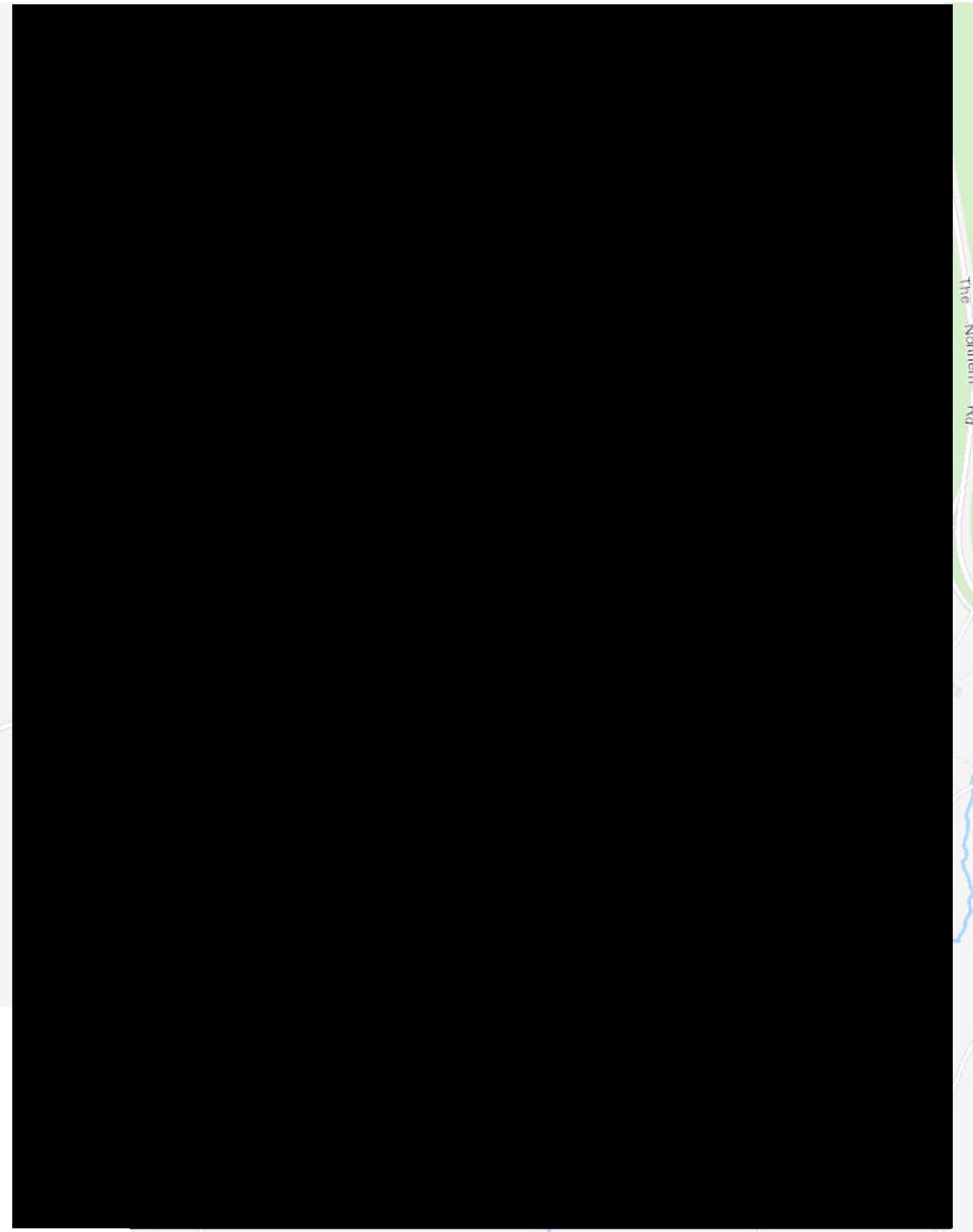
- Streams A2, A3, C4, C6, C10, C12, C13 D3, D5, D7, E3, F3, F5, F7, F10,H3, J4 and J10.

The correct and relevant mapping of 'Non-Certified – Other' areas within the subject land is of importance because of the restrictions which will be imposed by the 'Plan'. The restrictions include the propose zoning of the Non-Certified lands as *E2 – Environmental Conservation* ("*to protect* biodiversity") and a prohibition on any development within those lands.



Streams identified in the Draft Cumberland Plan Conservation Plan

Stream	Condition	Ecological Value - Current
A2	No stream present; land is ploughed regularly	Nil
A3	Partially eroded swale through ploughed paddock	Nil
C4	Upper part is a swale, not a "*river*"; lower part is in a farm dam	Minimal; a few trees along upper part
C6	No stream present; land is ploughed regularly; lower part is in a farm dam	Nil
C10	No stream present; land is ploughed regularly	Nil
C12	Upper part is a swale with a few trees; lower part is in a farm dam	Minimal
C13	Upper part is ploughed regularly; lower part is in a farm dam	Nil
C15	Entirely within a farm dam	Nil
C16	Entirely within a farm dam	Nil
D3	Entirely within farm dams	Nil
D5	Entirely within farm dams	Nil
D7	Entirely within a farm dam	Nil
E3	Upper part is a swale with a few trees; lower part is in a farm dam	Minimal
F3	A swale with a few trees	Minimal
F5	A swale with a few trees	Minimal
F7	Partially eroded swale through ploughed paddock	Nil
F10	Partially eroded swale through ploughed paddock	Nil
F12	Upper part is a tree-lined watercourse with weedy groundcover; lower part is in a farm dam	Moderate (upper part); nil (lower part)
G1	A tree-lined watercourse with weedy groundcover	Moderate
G3	A tree-lined watercourse with weedy groundcover	Moderate
G7	A tree-lined watercourse with weedy groundcover	Moderate
G9	Mostly within the main farm dam	Nil
H3	A swale with a few trees	Minimal
J4	Entirely within a farm dam	Nil
J10	Entirely within a farm dam	Nil
K3	A tree-lined watercourse with weedy groundcover	Moderate
K5	A tree-lined watercourse with weedy groundcover	Moderate
K7	A tree-lined watercourse with weedy groundcover	Moderate
K11	A tree-lined watercourse with weedy groundcover	Moderate
K12	A tree-lined watercourse with weedy groundcover	Moderate
L1	Entirely within a farm dam	Nil
L2	Entirely within a farm dam	Nil
L3	Entirely within a farm dam	Nil
L4	Entirely within a farm dam	Nil
L5	Entirely within a farm dam	Nil
L6	Entirely within a farm dam	Nil
L7	Entirely within a farm dam	Nil
L8	Entirely within a farm dam	Nil



8.3 Proposed Environmental Conservation

The proposed *Environmental Zoning* of the subject land contained in the Plan Viewer' (Figure 3; Attachment A) is based in part on the incorrect and/or inappropriate mapping identified above.

As a consequence, some of the proposed *Environmental Zoning* of the subject land is regarded by the undersigned as inappropriate; particularly as that zoning constitutes a prohibition on development of those lands (for other than "*environmental protection works or flood mitigation works*").

8.4 Outcomes

It is to be further noted that to achieve the environmental (riparian) outcomes identified in the proposed *Environmental Zoning* of the subject land would require significant costs for earthworks and revegetation rehabilitation of essentially all of the proposed E2 lands.

In particular, those portions of the Non-Certified – Other (*ie* riparian) lands which are currently farm dams will require substantial rehabilitation works and substantial expense. These would then be artificial watercourses.

9 DISCUSSION – CONSERVATION PLAN

A substantial number of the 'streams' identified by the Hydroline mapping on the Base Farm at Bringelly do not meet the requirements for "*rivers*" as defined in the *Water Management Act 2000*. These 'streams' do not therefore have any associated "*waterfront land*"; and do not constitute any impediment to the future urban development potential of these parts of the Base Farm.

Further, where there are "*rivers*" present on the subject site, they are of lower Strahler Orders than indicated on the Hydroline mapping (as documented above).

The Base Farm is predominantly of very low biodiversity or conservation value – given the long history of extensive and intensive agricultural use of the property. Biodiversity values currently are restricted to relatively small sections of the larger watercourses on the subject site - Streams F12, G1, G3, G6, G7 and G9 (in the south) and Streams K5, K7, K10, K11 and K12 (in the north).

F Dominic Fanning
Gunninah

gunninah

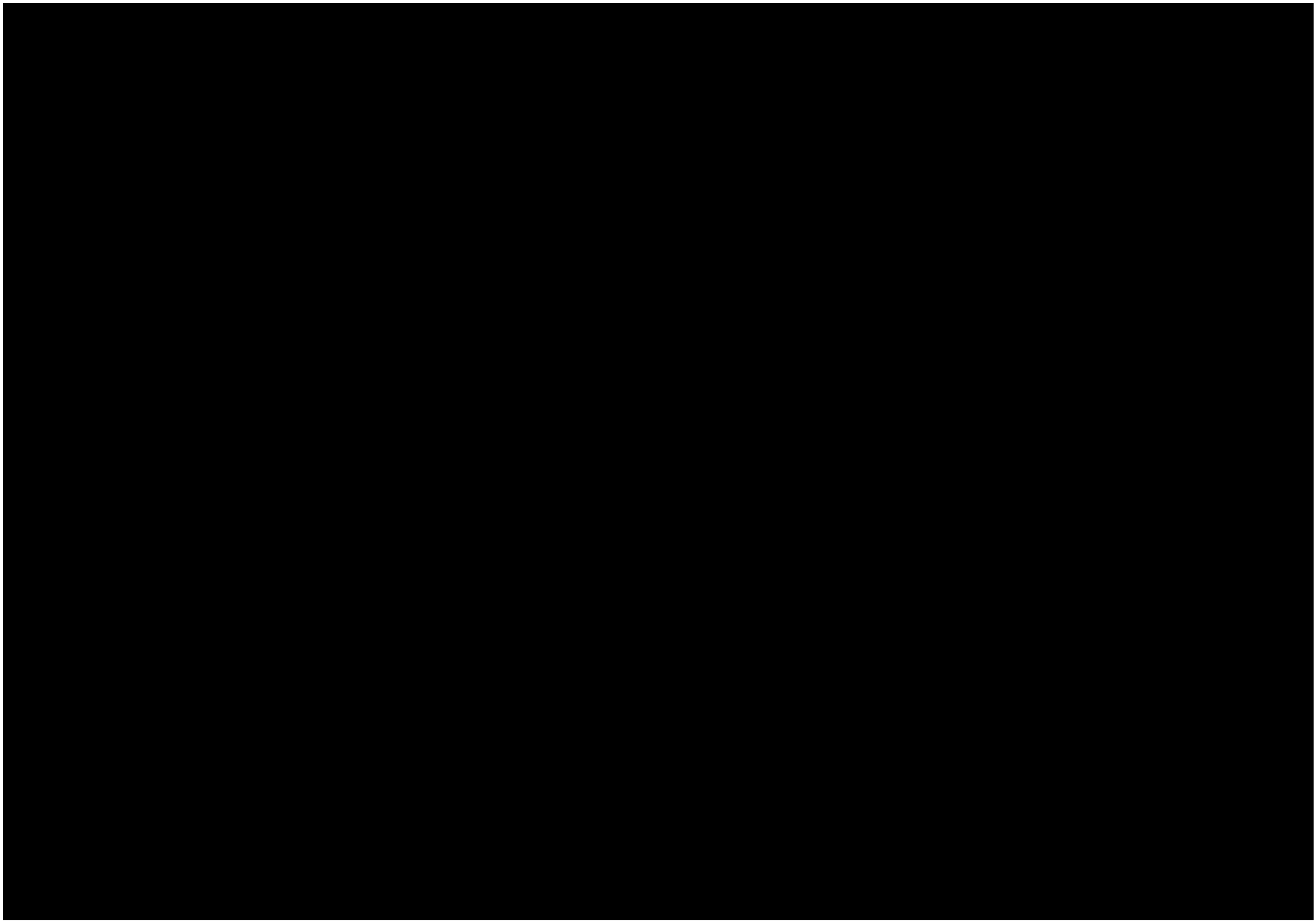
Base Farm
[redacted] Bringelly

Stream and Biodiversity Analysis

Attachment A
Plans and Maps

F Dominic Fanning - Gunninah

September 2020



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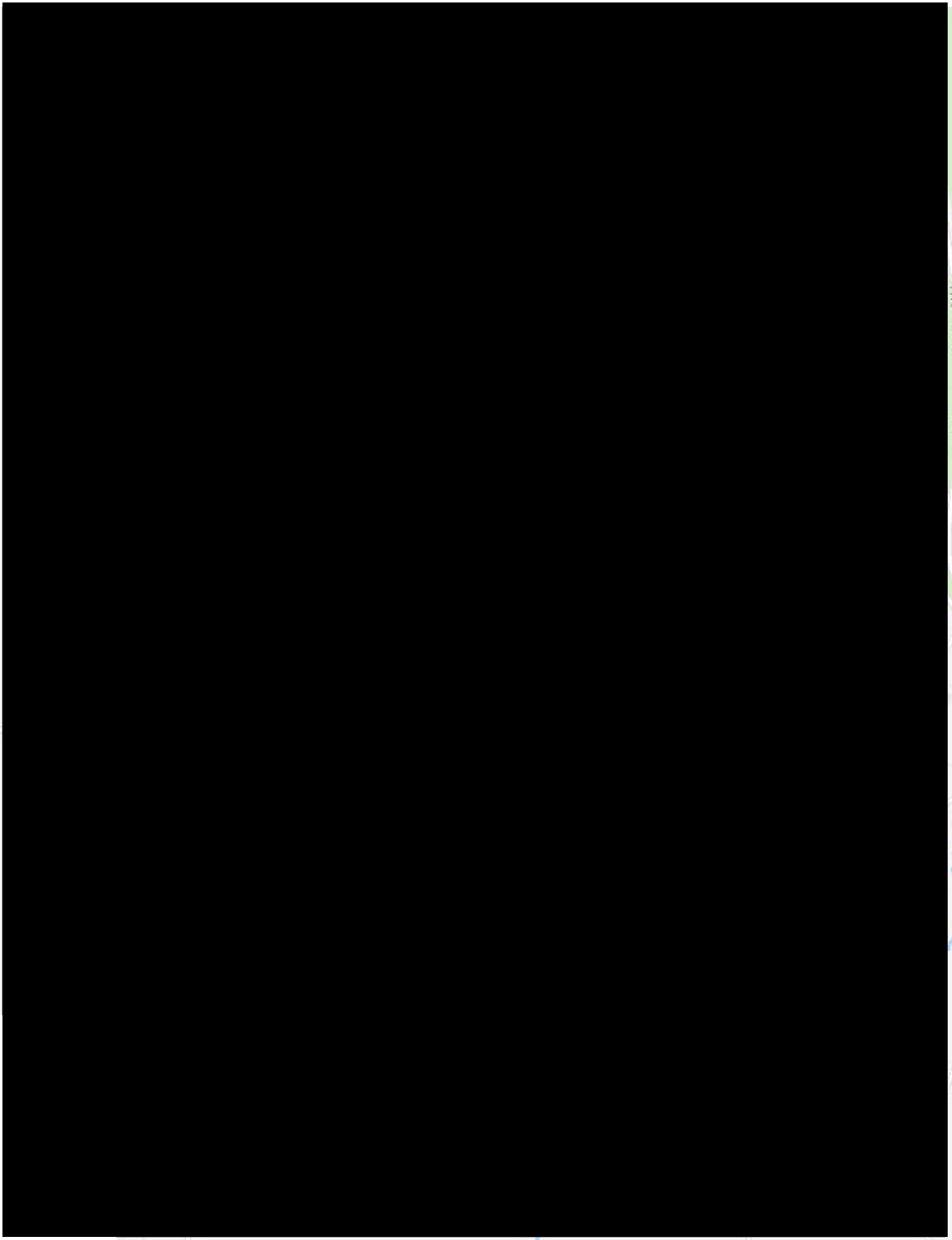

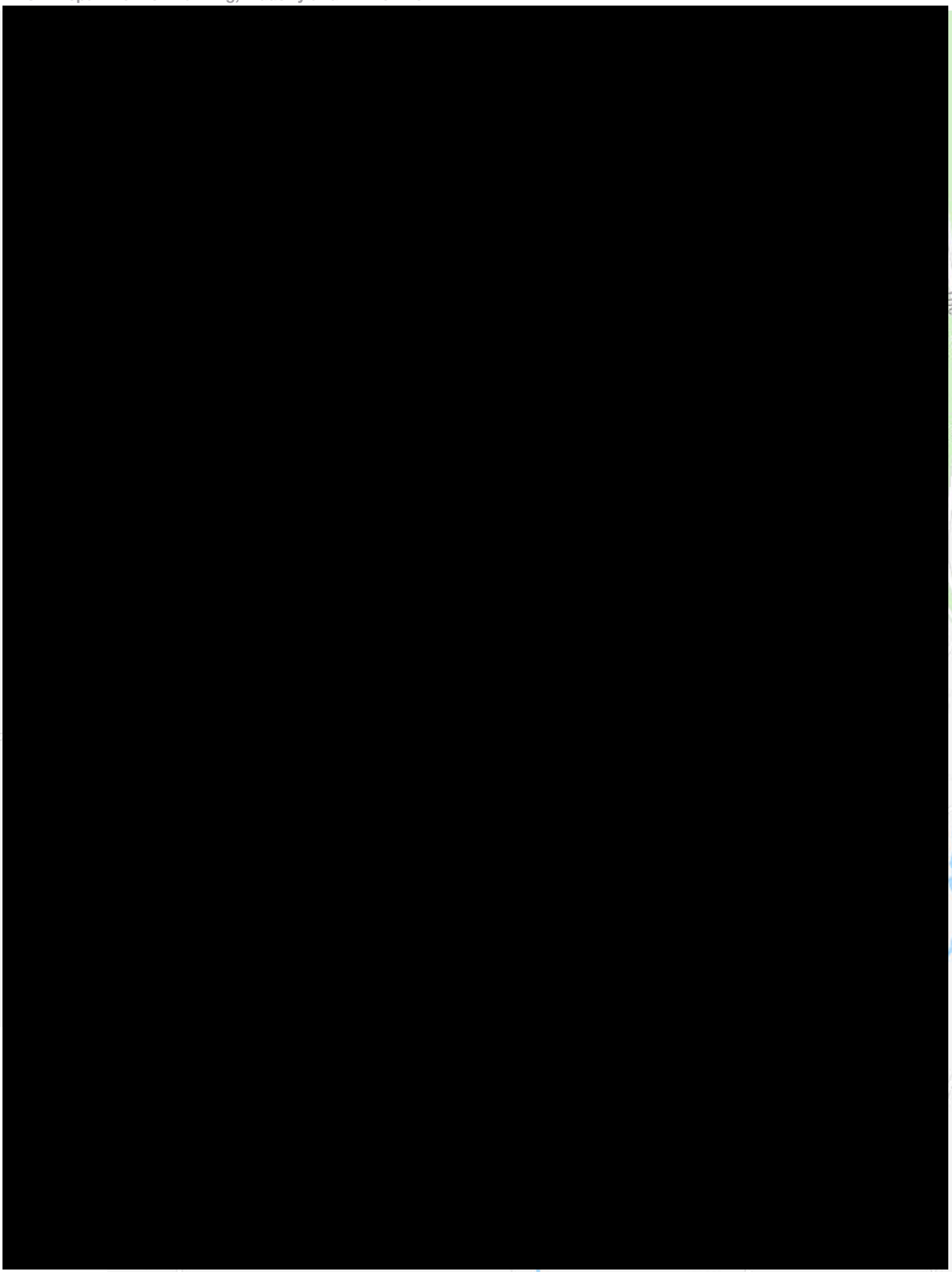

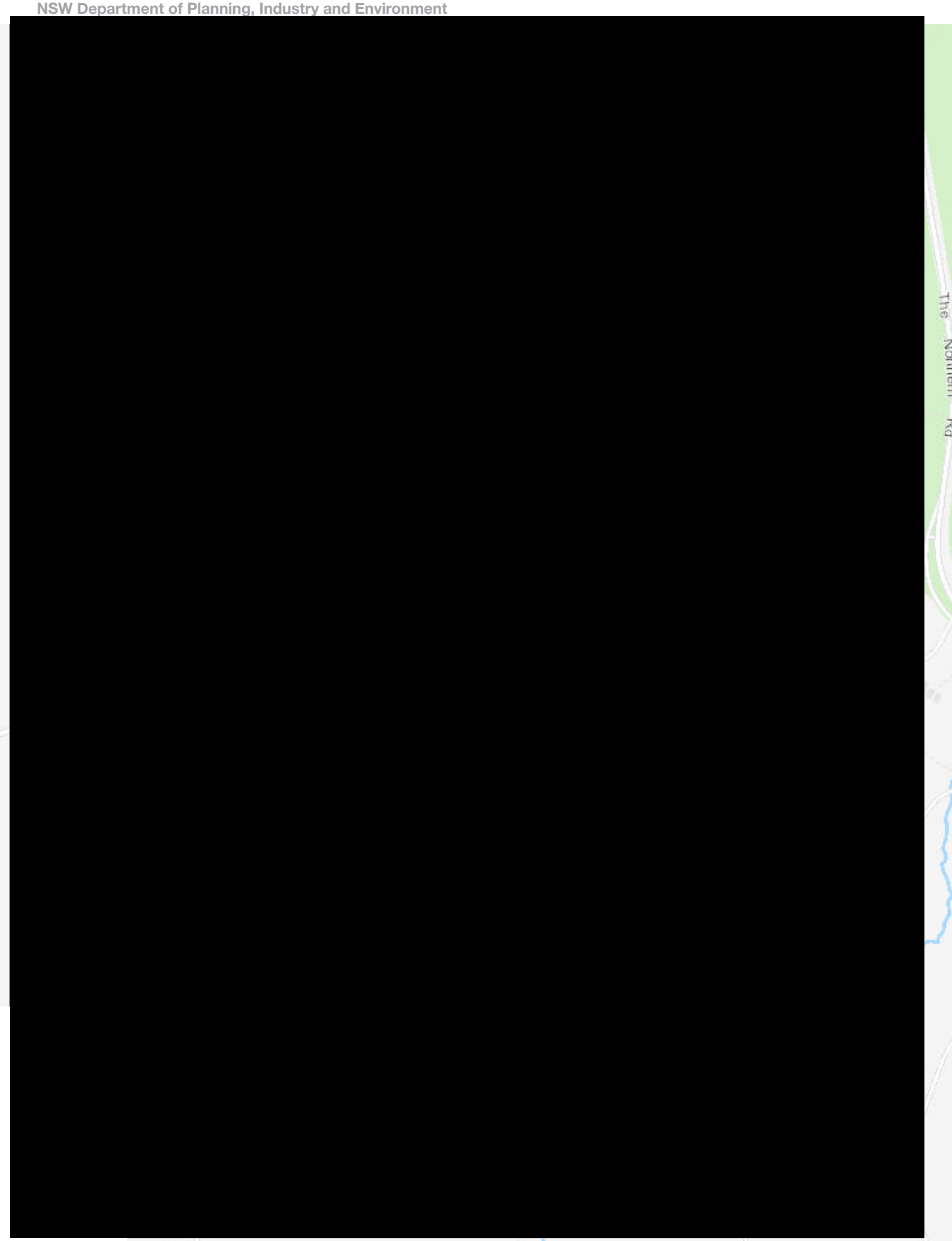

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Base Farm
[redacted] Bringelly

Stream and Biodiversity Analysis

Attachment B
Photographic Essay – Streams A to E

F Dominic Fanning - Gunninah

September 2020

[redacted]

Stream **A1**

Stream **A2**

Looking upstream

Looking downstream

Stream **A3 (1)**

Upper reaches

Stream **A3 (2)**

Middle reaches (near farm dam)

Stream **A3 (2)**

Lower reaches (near roadworks)

Stream **B1**

Lower stretch near roadworks for The Northern Road

Streams **C1, C2 and C3**

Lower part of Stream C2 upstream of access road – eroded swale through paddock

Stream C2 (through the centre from centre left towards the trees on the skyline); Stream C2 (from the centre to the stand of trees at the right of the photograph); Stream C1 (from Stream C2 in the centre towards the lone tree on the horizon). All three are shallow swales or eroded swales (the lower parts of Stream C2)

Stream **C4**

Upper part immediately downstream of access road

Central part downstream of access road (looking upstream)

Central part downstream of access road (looking downstream towards large dam)

Lower part looking upstream

Lower part looking upstream showing main flow

Lower part looking downstream showing main flow

Stream **C5 and C6**

Streams C5 and C6 immediately above the road

Stream **C10**

No watercourse of any sort at this location

Streams **C14 and C15**

Just above the dam and below the road

View upstream of the dam through which Stream C15 ‘flows’

Streams **D1, D2 and D3**

View through dam ‘containing’ Streams D1, D2 and D3

View through dam approximately along the alignment of the non-existent Stream D2

Streams **D4 and D5**

Stream D4 is located to the left of the trees – but there is no stream of any kind in this location

The dam containing the lower part of Stream D3 as well as Stream D5

Streams **D5 Plus**

The lower part of Stream D5 and then Stream D7 below the dam wall entering the main dam. These may have been 1st Order streams prior to the earthworks.

Streams on the opposite bank of the main dam - J5 (below the dwelling), J6 (centre) and J7, J8 and J9 (right of picture). None of these are "*rivers*".

Streams L4 and L5 are located in the centre of the main dam – left to right. These are likely to have been "*rivers*" prior to construction of the dam.

Streams **E1 and E2**

Streams E1 (above) and E2 (below)

Stream **E3**

Stream E3

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Base Farm
1675 The Northern Road, Bringelly

Stream and Biodiversity Analysis

Attachment C
Photographic Essay – Streams F to H

F Dominic Fanning - Gunninah

September 2020

Lot 106
DP 1236319

Lot 105
DP 1236319

Lot 100
DP 1171843

Lot 101
DP 1171843

Lot 106
DP 1236319

The Northern Road

Greendale Road

Dwyer Road

LEGEND

- Subject Site
- Hydroline
- Cadastre

Hydroline Mapping
BASE FARM

NORTH

50 0 100 200 300 400 500 metres

Ref: GRDBR-B-001-2	Date: 15/11/2019	Revision: A	Scale: NTS

Note: All areas and dimensions subject to detailed survey

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Streams **F1, F2 and F3**

Streams F1 and F2 – shallow swales; no "*rivers*"

Stream F3 – a shallow swale; not a "*river*"

Streams **F6 and F7**

Stream F6 – shallow swale; not a “*river*”

Stream F7 – shallow swale; not a “*river*”

Streams **F10 and F11**

Looking upstream along Stream F10 – shallow swale; not a “*river*”

Looking upstream along Stream F11 – shallow swale; not a “*river*”

Stream **F12**

Looking downstream along Stream F12 – a "*river*"

Where Stream F11 enters the main dam on the Base Farm

Stream **G1**

Lower part of Stream G1 – upstream (above) and downstream (below)

Stream G1 – upper part (above) and central part (below)

Stream **G2**

Stream **G3**

Stream G3 – looking downstream (above) and looking upstream (below)

Streams **G4 and G5**

Stream G4 – looking upstream (a swale; not a “river”)

Stream G5 – looking upstream (a swale; not a “river”)

Stream **G6**

Lowest part of Stream G6 – below track crossing

Lower part of Stream G6 – upstream of track crossing

Stream G6 – central part (above) and upper part (below)

Vegetation along Stream G6 – upstream of track crossing

Stream **G7**

Stream G7 – looking downstream from top (above) and looking upstream from bottom (below)

Stream **G8**

Stream G8 – looking upstream from near Stream G7

Stream G8 – looking upstream from photograph above. Most of Stream G8 is not a “river’; but is rather a gentle swale

Stream **G7 and G8**

Junction of Stream G7 (to the right) and G8 (to the left)

Stream **G9**

Stream G9 – upper part looking downstream from top (at track crossing)

Stream G9 – lower part looking downstream

Streams **H1 and H2**

Stream H1 – looking upstream (a swale; not a “river”)

Stream H2 – in centre middle ground above the dam (a swale; not a “river”)

Stream **H3**

Stream H3 – looking downstream above the track crossing

Stream H3 – looking downstream below the track crossing towards the main dam

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Base Farm
1675 The Northern Road, Bringelly

Stream and Biodiversity Analysis

Attachment D
Photographic Essay – Streams J to L

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September 2020

Lot 106
DP 1236319

Lot 105
DP 1236319

Lot 100
DP 1171843

Lot 101
DP 1171843

Lot 106
DP 1236319

The Northern Road

Greendale Road

Dwyer Road

100
90
80
90
100
90
80
80
90

LEGEND

- Subject Site
- Hydroline
- Cadastre

Hydroline Mapping

BASE FARM

NORTH

50 0 100 200 300 400 500 metres

Ref: GRDBR-B-001-2	Date: 15/11/2019	Revision: A	Scale: NTS

Note: All areas and dimensions subject to detailed survey

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Stream **J1**

Stream J1 – looking upstream above the track crossing (a swale; not a “river”)

Stream J1 – looking downstream below the track crossing (a swale; not a “river”)

Streams **J2 and J3**

Stream J2 – looking upstream from the track crossing (a swale; not a “river”)

Stream J3 – looking upstream from the track crossing (a swale; not a “river”)

Stream **J4**

Stream J4 – upper part (in foreground) and lower part (in the dam)

Stream J4 – lower part in foreground (in the dam)

Stream **J5**

Stream J5 – looking upstream above track crossing (a swale; not a “river”)

Stream J5 – looking downstream below track crossing (a swale; not a “river”)

Stream **J6**

Stream J6 – looking downstream (a degraded swale; not a “river”)

Stream **J7**

Stream J7 – looking downstream from the track crossing (a degraded swale; not a “river”)

Stream J7 – lower parts in and above the dam

Stream **J8**

Stream J8 – looking downstream (a degraded swale; not a “river”)

Stream **J9**

Stream J9 – looking upstream (a swale; not a “river”)

Stream J9 – looking downstream (a swale; not a “river”)

Stream **J10**

Stream J10 – within the farm dam

Stream **K1**

Stream K1 – looking downstream from the top (above) and looking upstream from the bottom (below)

Stream **K3**

Stream K3 – looking downstream from the top (above) and the lower reaches (below). The ‘junction’ between Streams K3, K4, K5 and L8 is in the centre right.

Stream **K4**

Stream K4 – full length of Stream K4 (above; note lack of “bed” or “banks”) and upper part of Stream K4 (below; note lack of native understorey)

Stream **K5**

Stream K5 – middle part above and lower part below

Stream **K6**

Stream K6 – through centre middle ground of photograph (a swale)

Stream **K7**

Stream K7 – upper part (above) and middle part (below)

Stream K7 – central part (above) and lower part (below)

Stream **K8**

Stream K8 –a swale

Stream **K9**

Stream K9 – lower part of Stream K9 (above; note lack of “bed” or “banks”) and upper part of Stream K9 (below; note lack of “bed” or “banks”)

Stream **K10**

Stream K10 – lower parts (above and below)

Stream K7 – central part (above) and upper part (below)

Stream **K12**

Stream K12 – lower parts - looking downstream (above) and upstream (below)

Stream K12 – central part (above) and upper part (below)

Stream **K13**

Stream K13 – a swale; not a “river”

Streams **L1 to L8**

Stream L1 – main part of the dam (in centre of photograph)

Streams L2 to L8 – all located within the dam down to the dam wall