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West Mokoan Solar Farm
South Energy
21 September 2020

West Mokoan Solar Farm

Surface Water Assessment

West Mokoan Solar Farm

Surface Water Assessment

Client: 892 Yarrawonga Development Pty Ltd

ABN: 30 628 034 300

Prepared by

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Quality Information

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Reviewed by	Rocco Vivarelli

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Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
1	27/08/2020	Draft	Tony Barrett	
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1.0 Introduction

1.1 Site Context

AECOM Australia Pty Ltd is preparing a planning permit application on behalf of 892 Yarrawonga Development Pty Ltd (South Energy) (the Applicant) for the construction of a solar farm facility on land adjacent to Benalla-Yarrawonga Road and Lake Mokoan Benalla, Victoria. The site and lot address are presented in Table 1.

Table 1 Site addresses included in the development

Site Address	892 Benalla-Yarrawonga Road, Goorambat 81 Lake Mokoan Road, Goorambat Benalla - Yarrawonga Road, Benalla 616 Benalla - Yarrawonga Road,
Legal Description	Lot 1 PS625748F Lot 2 PS625748F Lot 1 TP173518C Lot 1 TP104377 Lot 1 LP206524H 98B PP2704 and Lots 2-5 LP206524H

The land is currently used for broadacre farming, located within a Farming Zone (FZ), in accordance with the Benalla Planning Scheme. It is located approximately 5 kilometres north-east of the town centre of Benalla, and approximately 8 kilometres south-east of the township of Goorambat. Figure 1 provides the site context and proximity to the town of Benalla and the Winton Wetlands.

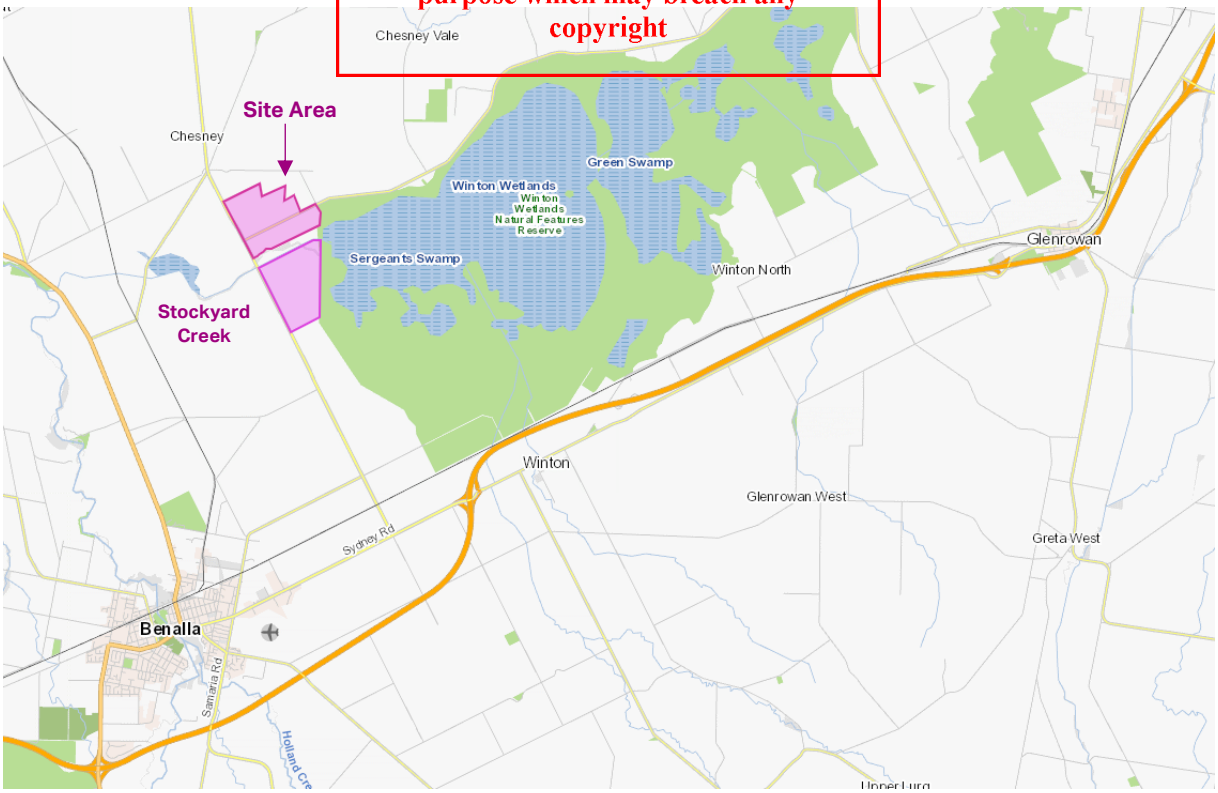


Figure 1 Site Context and Surrounding Features (Source: VicPlan 2019)

1.2 Scope of Work

The purpose of this Surface Water Assessment is to define, at a high level, the potential changes in water quality, water quantity and stream stability as a result of the proposed development. It also outlines strategies to mitigate, minimise and manage the potential impacts associated with changes in surface water quality and quantity.

The scope of this high-level surface water assessment is to:

- engage the local CMA to discuss potential flooding implications of development;
- obtain and collate relevant GIS data from public sources;
- identify all watercourses and other surface water bodies within and adjacent to the study area;
- provide high level commentary on the existing site conditions and likely changes (if at all) in water quantity, quality and stream stability as a result of the proposed development; and
- broadly outline strategies to minimise and manage any likely adverse impacts resulting from the discharge of stormwater from the site to the surface water receiving environment.

2.0 Existing Waterways and Surface Water Features

2.1 Catchment Context

The study area is located in a sub-catchment of Broken River; which lies approximately 4.8km west of the site. East of the site is the Winton Wetlands Natural Features Reserve, formally known as Lake Mokoan. This wetlands reserve is located on a recently decommissioned artificial lake that was previously fed with water from the Broken River via the Lake Mokoan Inlet Channel.

Historically, outflow from Lake Mokoan was conveyed along the Stockyard Creek and back into the Broken River, west of the study area. However, as part of Lake Mokoan decommissioning works completed by Goulburn Murray water, some sections of the outlet channel/Stockyard creek channel have been regraded (reverse graded) to allow water to be diverted from the Broken River and to flow in the opposite direction towards the Lake Mokoan Diverters Pipeline Pumping Station located immediately west of the dam wall.

The Stockyard Creek forms a natural low point through the local catchment with gentle gradients extending to the north of the study area.

Figure 2 provides an overview of the catchment context and surrounding waterways.

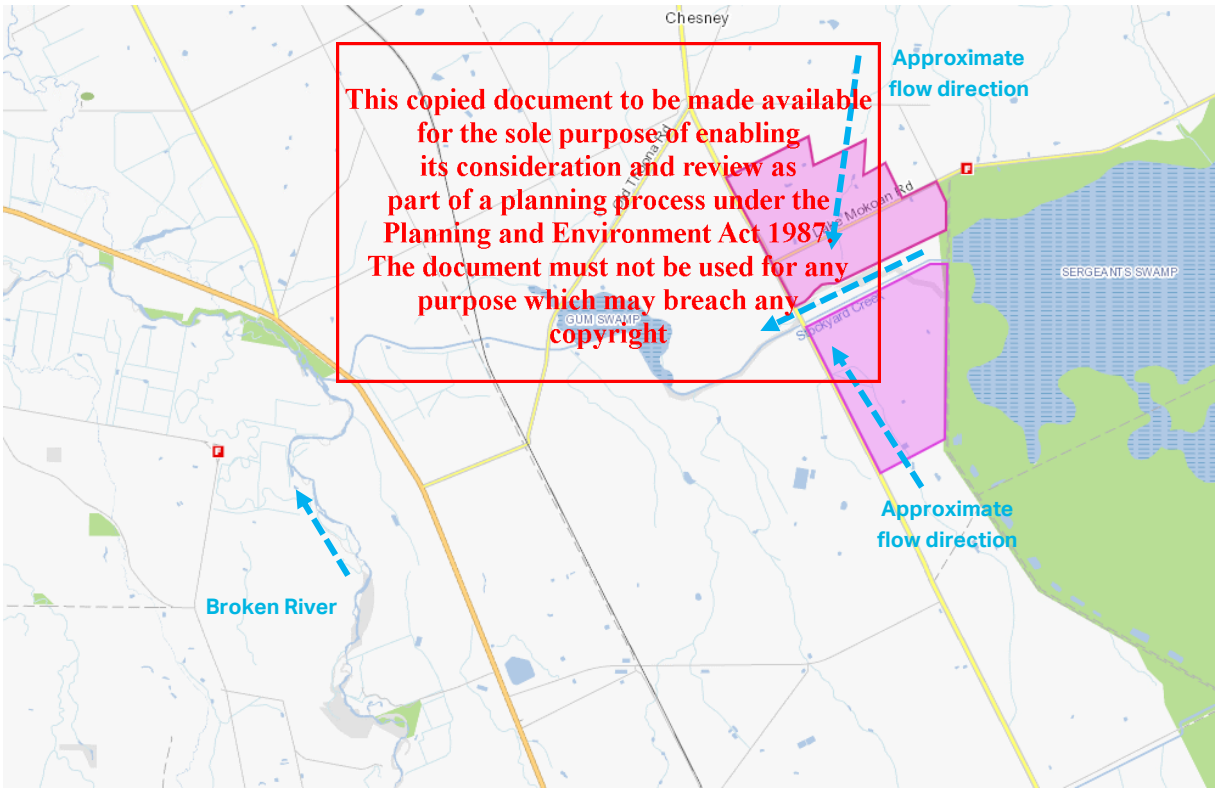


Figure 2 Site context and proximity to Broken Creek, Stockyard Creek and Winton Wetlands Reserve (Source, MapShareVic – DELWP 2019)

2.2 Land Subject to Inundation Overlays and Floodway Overlays

The Department of Environment, Land Water and Planning's (DELWP) 'Mapshare' and 'VicPlan' mapping portals provide information on the extent of Land Subject to Inundation Overlays (LSIO) and Floodway Overlays (FO) across the state.

According to these datasets, the site is not directly affected by any LSIO or FO. The nearest FO is located on the Stockyard Creek that runs between the two proposed sites, just beyond the site boundaries.

It should be noted that there are discrepancies between the data sets presented in each of these map portals. Figure 3 highlights the proximity of the LSIO (pale blue) and FO (light blue) as defined on the VicPlan mapping portal, whereas Figure 4 illustrates the data presented on the Mapshare portal.

Figure 4 shows that DELWP's Mapshare portal does not display the LSIO layer and there are also gaps in the FO layers when compared to those presented in Figure 3.

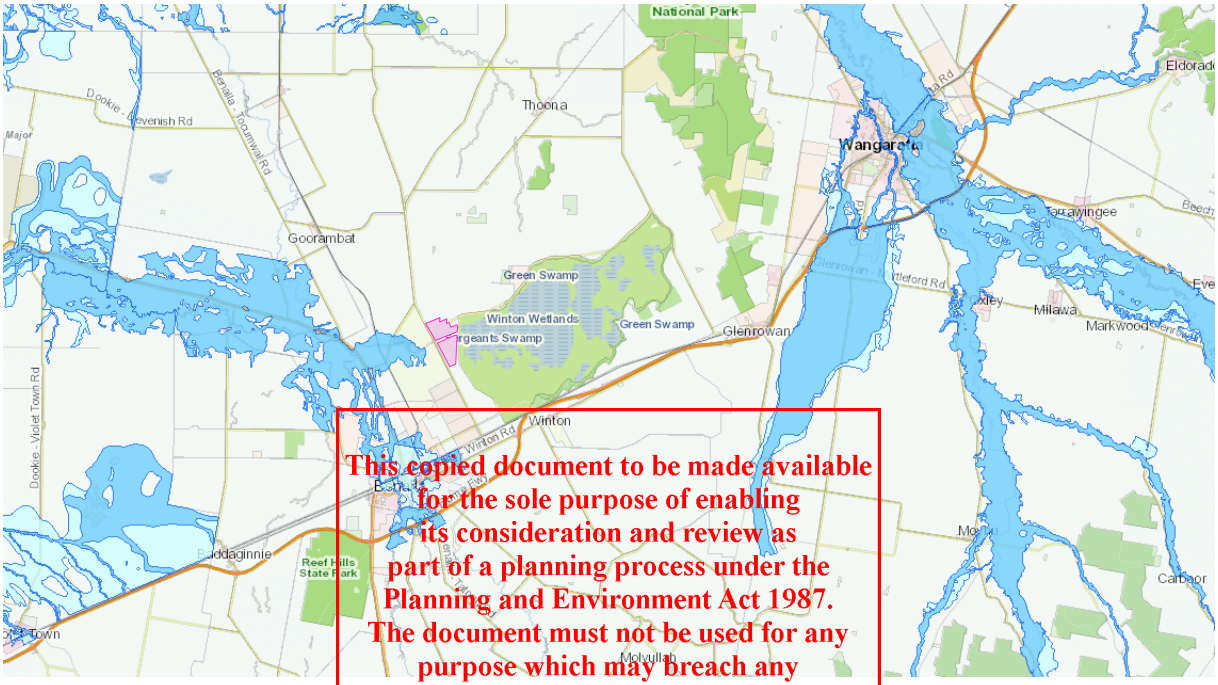


Figure 3 Proximity of Land Subject to Inundation Overlays (LSIO, Light blue), Floodway Overlays (FO, blue) (Source: DELWP VicPlan 2019)

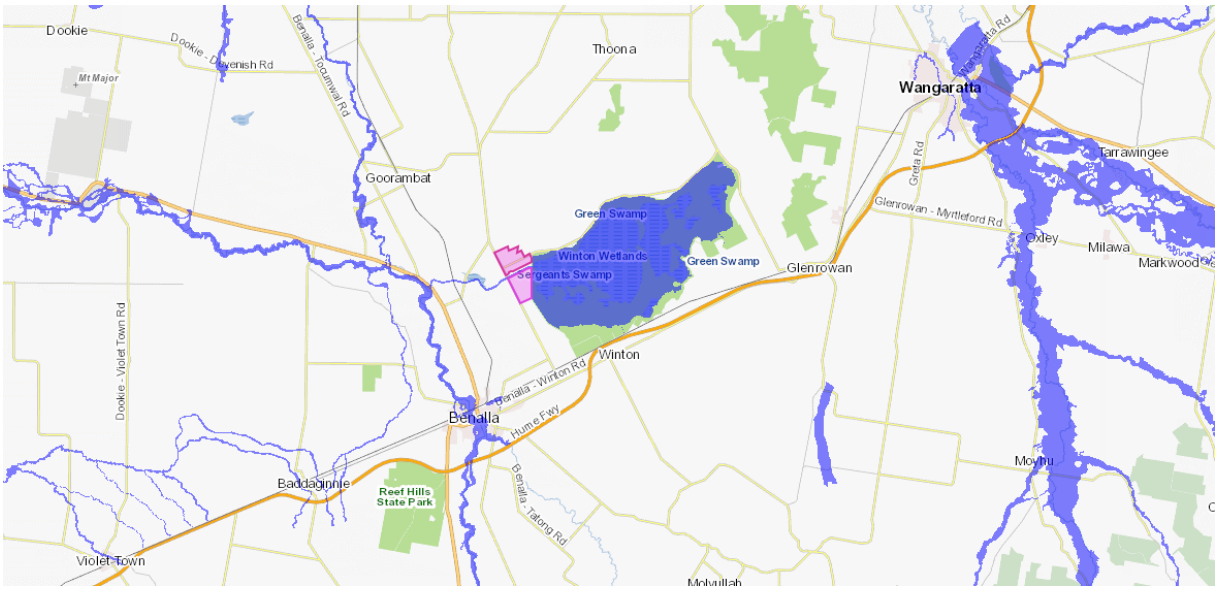


Figure 4 Proximity of Floodway (blue) (Source: DELWP Mapshare 2019)

2.3 Urban Floodway Zone

The Goulbourn Broken Catchment Management Authority (GBCMA) 1% Flood Level Contour Atlas displays an area of Urban Floodway Zone (UFZ) encroaching the southern land parcel, as well as the southern reaches of the northern land parcel (Figure 5 below with full map sheet presented in Appendix A).

An Urban Floodway Zone is categorized to specific land use types that are of low intensity uses, such as agricultural and recreational purposes (Melbourne Water, 2017). Development on an area of UFZ is restricted and requires permission from the catchment management authority. Additionally, an UFZ has limited land use types, neither of which the solar farm will fall under.

However, this UFZ is not referenced on any planning related maps or databases. Additionally, the area of suspected UFZ was not represented on any of the DELWP Mapshare sites.

AECOM sought clarification on the extent of the UFZ from GBCMA on 30 July 2019. The GBCMA responded the same day stating that the Flood Atlas includes water bodies that look like UFZ and that there was no area of UFZ around or over the Winton Wetlands Reserve.

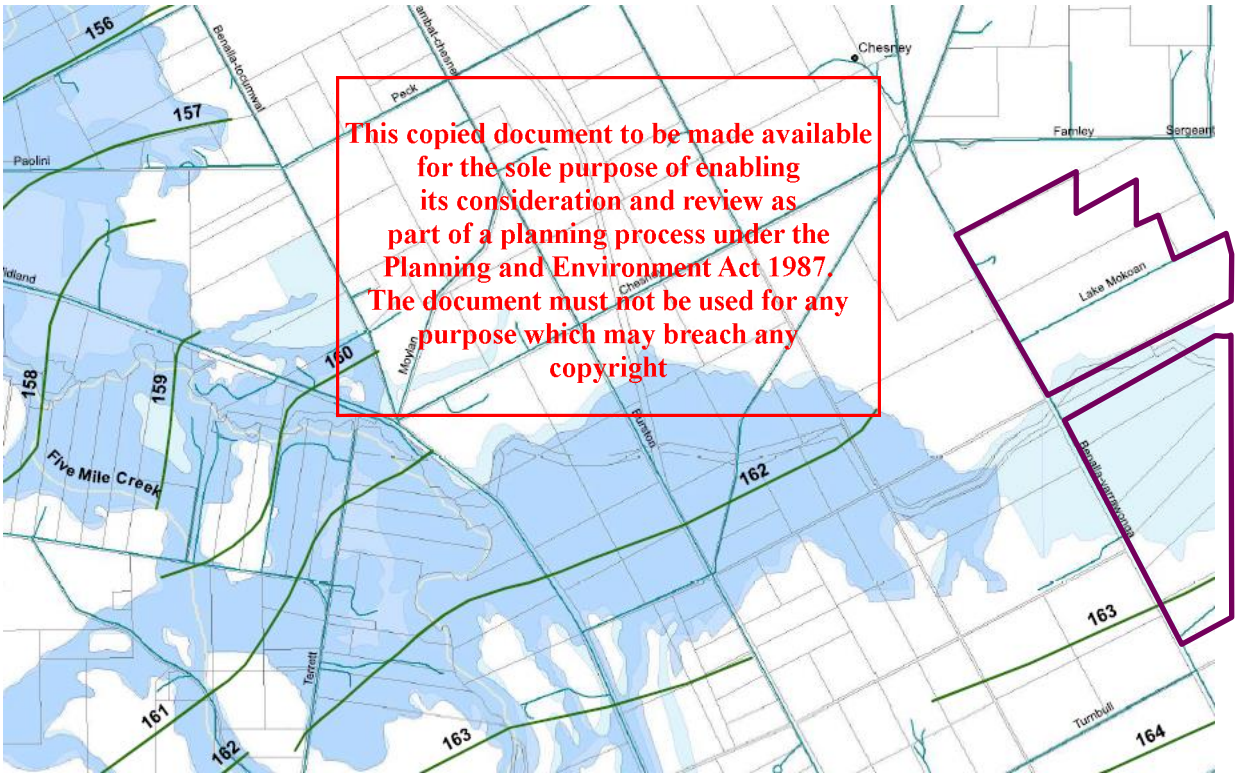


Figure 5 Floodway Overlay zone (blue), Urban Floodway Zones (light blue) and 1%AEP Flood depth contours (Source: GBCMA)

2.4 Wetlands

DELWP's online mapping data identified a wetland, southeast of the study area (wetland ID No. 67909) within the Winton Wetland Natural Features Reserve. The Winton Wetland, formerly recognised as Lake Mokoan, includes a number of additional swamps. These collectively encompass an area of 3,198 hectares and also provide water to the Stockyard Creek.

The area has been described as a largely reformed wetland, containing freshwater marshes and meadows that are periodically inundated. Historically, the Winton Wetlands acted as an offline water storage supply for irrigation, fed by a channel from Broken River. However, the decommissioning of Lake Mokoan potentially decreases the quantity of floodwater during peak flood flows.

2.5 Site features

The spatial and survey data obtained indicates the highest elevation on northern land parcel is approximately 173m AHD, close to the homestead. The lowest elevation for this land parcel is 163m AHD close to the Stockyard Creek embankment. Consequently, all sub-catchment flows within the norther land parcel drain southward towards the Stockyard Creek.

Topographical survey data for the southern land parcel indicates the land is relatively flat with a gentle gradient falling towards the stockyard creek. Elevation on the southern land parcel ranges from approximately 163m AHD in the south east, to 160m AHD along the north western boundary.

The site contains a number of water features including constructed drains, natural channels and farm dams. Aerial imagery indicates that some of these farm dams are interconnected, however, only 2 dams, in the centre of the northern and parcel, appear to be connected by a broken, dry channel. This channel is shown on the site survey data (Figure 6). All other potential flow pathways across the site seem to be less formal with little evidence of channels or eroded lines.

At the southern boundary of the northern land parcel, the aerial imagery shows the land becoming more vegetated and eventually transitioning to marsh-like conditions, close to the Benalla-Yarrawonga Rd bridge. This vegetated channel forms the lowest part of the catchment, adjacent to the Stockyard Creek embankment.

The southern land parcel also has a number of features that will influence the eventual siting and design of the proposed solar farm. These features include a drainage easement that runs through the lower south western portion of the study area, an area of Crown Land in the north east area and an adjacent channel that runs to the Stockyard Creek. This channel drains excess water from the land and discharges it into the Stockyard Creek during wet seasons. It is worth noting this channel has not been identified by the GBCMA or GMW as a designated waterway.

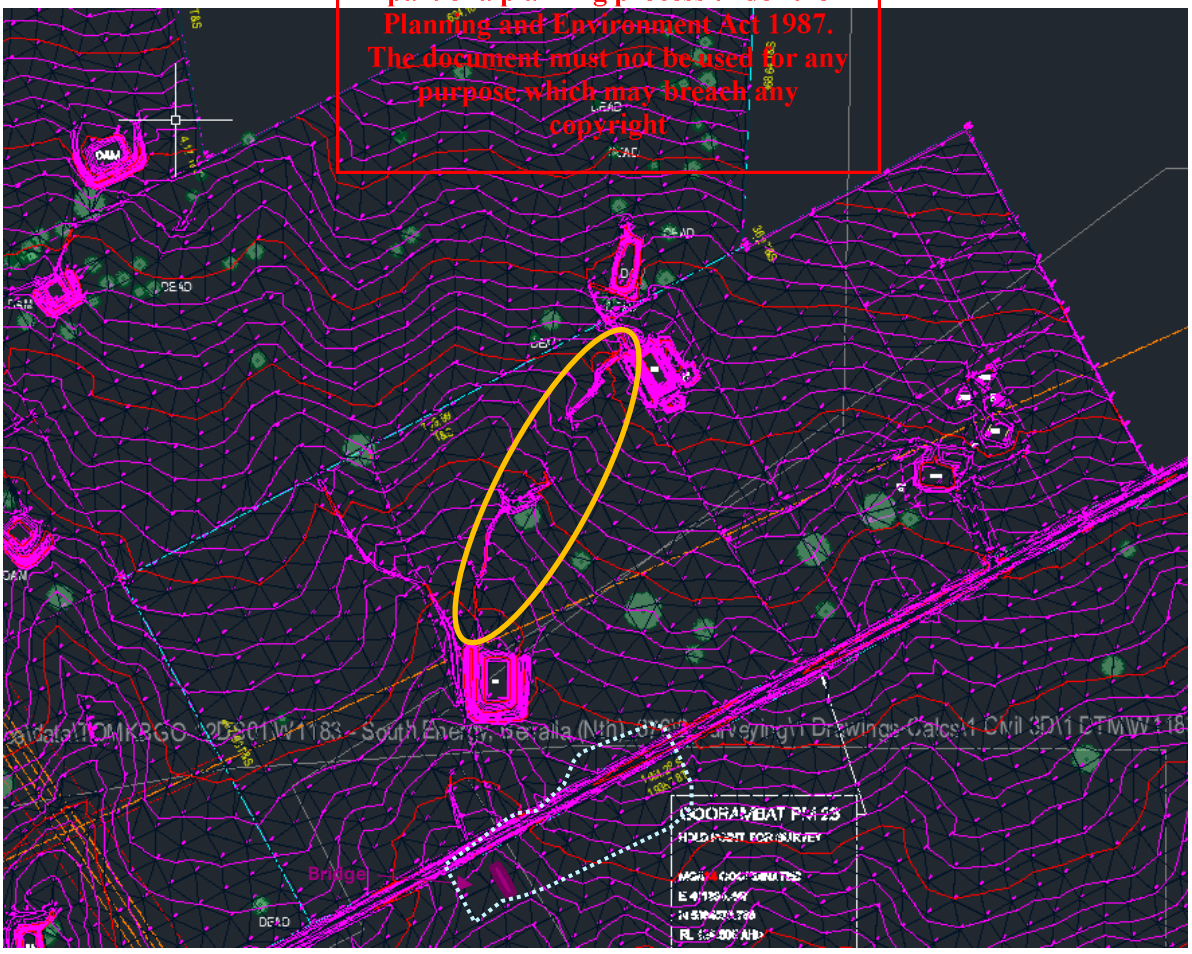


Figure 6 Sample of survey data showing remnants of a channel (circled) between two farm dams (20cm contours)

3.0 Feedback from the Goulburn Broken Catchment Management Authority

The Goulburn Broken Catchment Management Authority (GBCMA) is the region's peak natural resource management body and is responsible for the implementation of the Regional Catchment Management Strategy. In this role, the GBCMA guides development to ensure the region's land and water resources are protected for the benefit of the region.

AECOM submitted two Floodplain Advice Requests to the GBCMA on 07 February 2019 for the West Mokoan Solar Farm and the Kennedys Creek Solar Farm. The Kennedys Creek Solar Farm is also a South Energy Project located on nearby land to the south of the West Mokoan Solar Farm (Planning Application no. PA1900684 – Benalla Planning Scheme). The objective of these enquiries was to seek their in-principle support for the projects and understand the nature of any permit conditions they may place on the development.

GBCMA responded on 27th February 2019 outlining guidance for the West Mokoan Solar Farm and on 28th February 2019 outlining guidance for the Kennedys Creek Solar Farm. The two letters outlined that the GBCMA would not object to the proposed solar farms, subject to conditions outlined at Section 3.2 below (the full responses are provided in Appendix B of this report).

Despite the proximity of the Kennedys Creek Solar Farm and the West Mokoan Solar Farm, the two letters set slightly different freeboard requirements for finished floor levels of inverters, transformer blocks and buildings. The letter dated 27th February 2019 required 450 mm above general surrounding ground level for inverters and transformer blocks, whereas the letter dated 28th February 2019 required 300 mm above the applicable 1% AEP flood level.

GBCMA provided clarification via the email dated 27 August 2020, which identified that where flood level information is available, then 300 mm freeboard above 1% AEP is applicable. In the absence of flood information, 450 mm above general surrounding ground level is recommended by GBCMA (refer to Appendix B for GBCMA correspondence).

For the West Mokoan sites, detailed flood level information is available in the adjacent Stockyard Creek gauging station. This provided the justification to use 300 mm freeboard above the 1% AEP flood level for the West Mokoan Solar Farm.

It is worth noting the southern land parcel was added to the proposed project area after this floodplain advice application was made. However, the GMW Waterway Determination assessment does consider this additional land parcel and is presented in Section 4.0 of this report.

3.1 Goulburn Broken CMA Observations

At the time of the floodplain advice application response, the GBCMA stated there was no flood or detailed ground level information for the site, however they drew attention to the nearest 1% AEP flood contour, beyond the western boundary of the site. These flood contours were established from limited 1993 flood levels.

The GBCMA also identified a designated waterway crossing the site from the north towards the Stockyard Creek.

3.2 Goulburn Broken CMA Conditions

The response received on 27 February 2019 from the GBCMA indicated that they would not object to the proposed solar farm, subject to the following conditions:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 7.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 450 millimetres above general surrounding ground level.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).

4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

The response received on 28 February 2019 from the GBCMA indicated that they would not object to the proposed solar farm, subject to the following conditions:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 7.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level as shown in Figure 1.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

3.3 Further clarification and site visit

The designated waterways map provided with the GBCMA response showed some discrepancies with the aerial imagery and site survey data. Furthermore, several waterways across the site were poorly defined with little evidence of a drainage channel or eroded line.

AECOM sought further clarification on determining setbacks for these poorly defined designated waterways. The GBCMA provided a response stating setbacks of 15 m from the centreline of a waterway would be acceptable (Appendix B).

A joint site meeting was organised with the GBCMA and Goulburn Murray Water (GMW) on 02/07/19 to discuss these waterways and determine the next steps.

The site meeting provided an opportunity to discuss setback sizes for some of the waterways across the site. It was confirmed during the discussion that setbacks can vary for different waterways and, where it can be demonstrated there are no impacts, setbacks of 5m wide may be accepted.

The site meeting also confirmed that some of the designated waterways were not well defined. It was recommended that a waterway determination assessment should be carried out by GMW to ascertain the purpose, status and delineate these waterways.

Figure 7 Location of designated waterways across the site, shown purple (Source: GBCMA Floodplain Advice Response)

4.0 Goulburn Murray Water, Waterway Determination

Goulburn Murray Water (GMW), a statutory corporation, is Australia's largest rural water corporation. It manages approximately 70 per cent of Victoria's stored water resources, 50 per cent of Victoria's underground water supplies and Australia's largest irrigation delivery network.

AECOM submitted a Waterway Determination application to GMW on 15 July 2019. GMW subsequently carried out the waterway determination assessment and provided a response on 30 July 2019.

4.1 Waterway determination assessment findings

The waterway determination for the West Mokoan site identified one designated waterway within the northern site area and one within the southern area.

The waterway across the northern site drains a catchment of approximately 62 hectares. It is described by GMW as a waterway with developed and undeveloped drainage lines as it passes through the site. The waterway determination assessment also indicated the lowest section of this waterway flows in a south easterly direction. Figure 8 illustrates the location of the waterway across the northern site area.

The waterway across the southern site area is described by GMW as a developed drainage channel. This channel serves a catchment of approximately 72 hectares and links multiple land parcels as it flows north towards the Stockyard Creek.

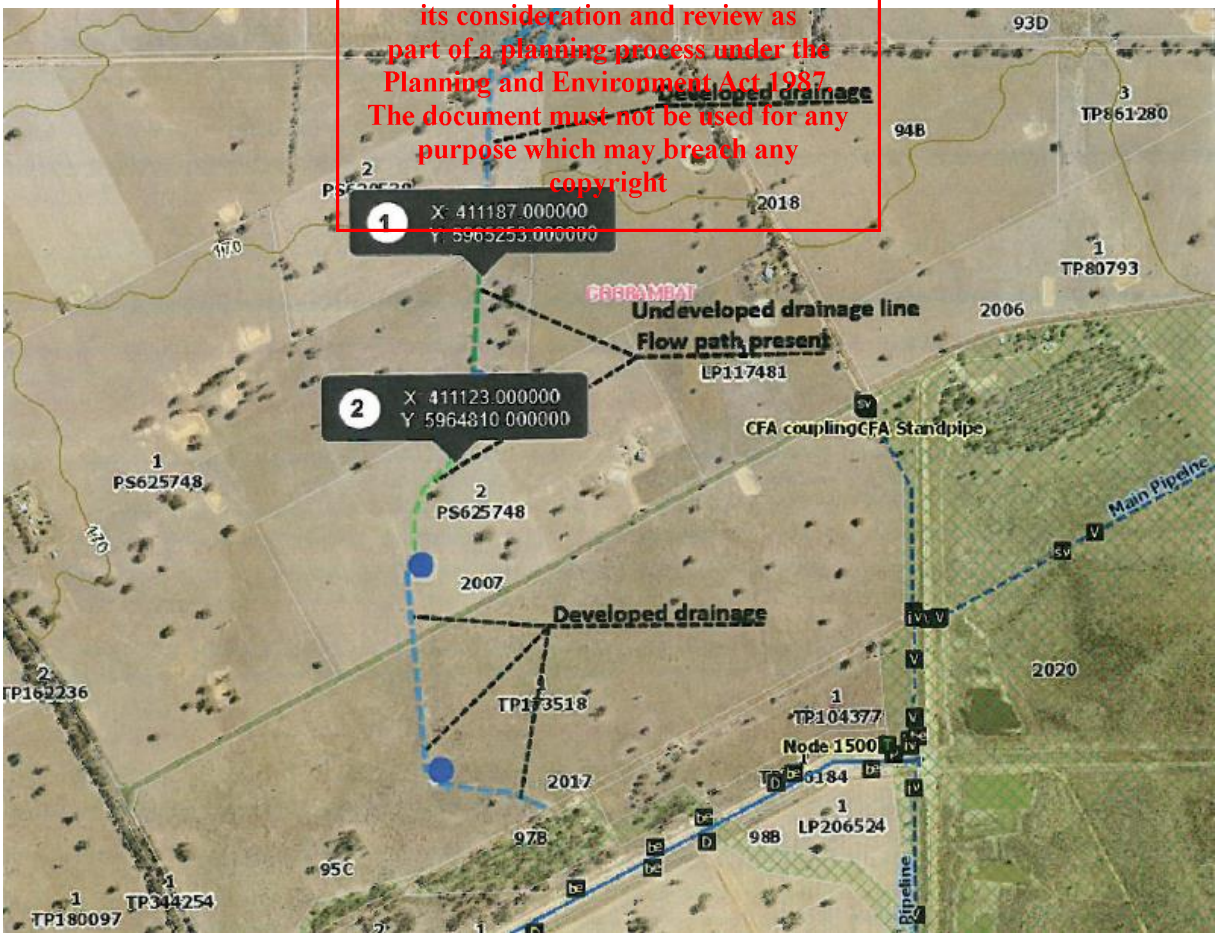


Figure 8 The GMW confirmed waterway on the northern area of the West Mokoan site (shown blue and green).

Figure 9 The GMW confirmed waterway across the southern area of the West Mokoan site (shown blue).

The waterway determination inspection report concluded that additional drainage lines, depressions, gullies may be present, requiring further protection development by means of setbacks. The full response from GMW is provided in Appendix C of this report.

5.0 Managing flood risks

The construction activities and some of the proposed infrastructure may change the local drainage and flood characteristics. The following sections highlight some of these aspects for further consideration including measures on how these impacts will be managed.

5.1 Solar Arrays

Runoff from the proposed solar arrays will be intercepted by grassed, pervious surfaces and will not significantly change the fraction of imperviousness for the total area of the site. Nevertheless, the solar arrays may change local flow characteristics if they are sited in active flood pathways.

The solar panels in the site area located north of the Stockyard Creek will be set back at least 15m from the centreline of the designated waterway that traverses the centre of the site. This is in line with the guidance provided by the GBCMA in an email (dated 12 June 2019).

The designated waterway that flows through the south western corner of the southern site is contained within a 5m wide drainage easement. The proposed solar arrays in this area will be set back at least 5m from the edges of the easement. This will provide access for future waterway maintenance activities, on both sides of the channel.

Additionally, the solar panels will be elevated such that they are least 300mm above the predicted 1% AEP flood level when stowed in the horizontal position.

5.2 Internal Access Roads

The concept plan for the northern site indicates a perimeter access road with multiple 'lateral' connecting roads that run south west to north east through the site. These access roads will be designed on grade to allow surface water flows to continue across the site during significant flood events. Additionally, roads that cross well defined waterways (e.g. waterways with channels) may require bridges or culverts to allow uninterrupted flows of floodwater.

Local drainage may be required to convey flows captured in swale drains associated with the access tracks and at low points. All existing access tracks and local roads will be maintained at the current elevation.

A works on waterways permit will be sought where the access roads cross the designated waterway. All other waterway crossings will be designed in accordance with the guidance of the relevant authorities.

5.3 Substation Area

The finished floor levels of the substation area will be constructed 300mm above the 1% AEP flood level as conditioned by the GBCMA.

5.4 Inverter Blocks

The inverter blocks will be distributed throughout the site, adjacent to the access tracks. Recognising the requirements of the GBCMA, the base for these structures will be set at least 300mm above the predicted 1% AEP flood event.

5.5 New impervious areas (e.g. Concrete, roofing and transformer cabinets)

Impervious areas of the site could concentrate runoff or displace surface water storage. However, the impacts of these structures are expected to be minor with runoff flowing onto impervious areas where infiltration will occur. For these areas, design considerations will include level spreaders to convert channelised flow back to sheet flow or discharge into infiltration drainage channels or soak pits.

5.6 Site Fencing

Poorly designed fencing can collect debris and exacerbate local flood impacts. Site fencing will be designed so that it does not obstruct flood flows across the land. This likely to include farm type fencing that features a large open mesh construction or vertical farm style fencing as conditioned by the GBCMA.

5.7 Land Remediation

Changes in soil characteristics occur primarily due to construction activities through excavation, compaction, erosion, leaching and contamination. The removal of vegetation, due to excavation activities and disturbance will also change the infiltration capacity of the soil, leading to increase runoff.

To manage these impacts, disturbed ground will be quickly stabilised and reinstated. Similarly, any land drains or ditches will be reinstated or replaced to maintain existing drainage characteristics.

Reestablishment of surface treatments are critical to erosion and sediment control. consideration of rock lining drainage channels where reestablishment cannot be achieved should be made.

5.8 Flood Resilience

Information from the GBCMA and anecdotal evidence from the landowner suggest the land may be flood prone with extended periods of waterlogging. The proposed infrastructure will be designed to shed water as well as withstand regular and extended periods of inundation.

5.9 Site Grading

Upstream and downstream boundaries of the site will be suitably graded with the site surfaces to retain the existing flood flow pathways across the site.

5.10 Localised Flows

It is not anticipated that runoff from the solar arrays will cause erosion. However, local drainage controls will be implemented where concentrated flows have been identified.

5.11 Understanding Flood Risk

The lower catchment position and close proximity of the Stockyard Creek indicate the potential for flooding across the site. Additionally, there are a number of waterways and water management structures on site that have not been identified as a designated waterway by the GBCMA or GMW.

Detailed hydrologic and hydraulic investigations will be undertaken as part of detailed design to determine the extent, depth and flow hazards of surface water within the site.

6.0 Managing surface water quality

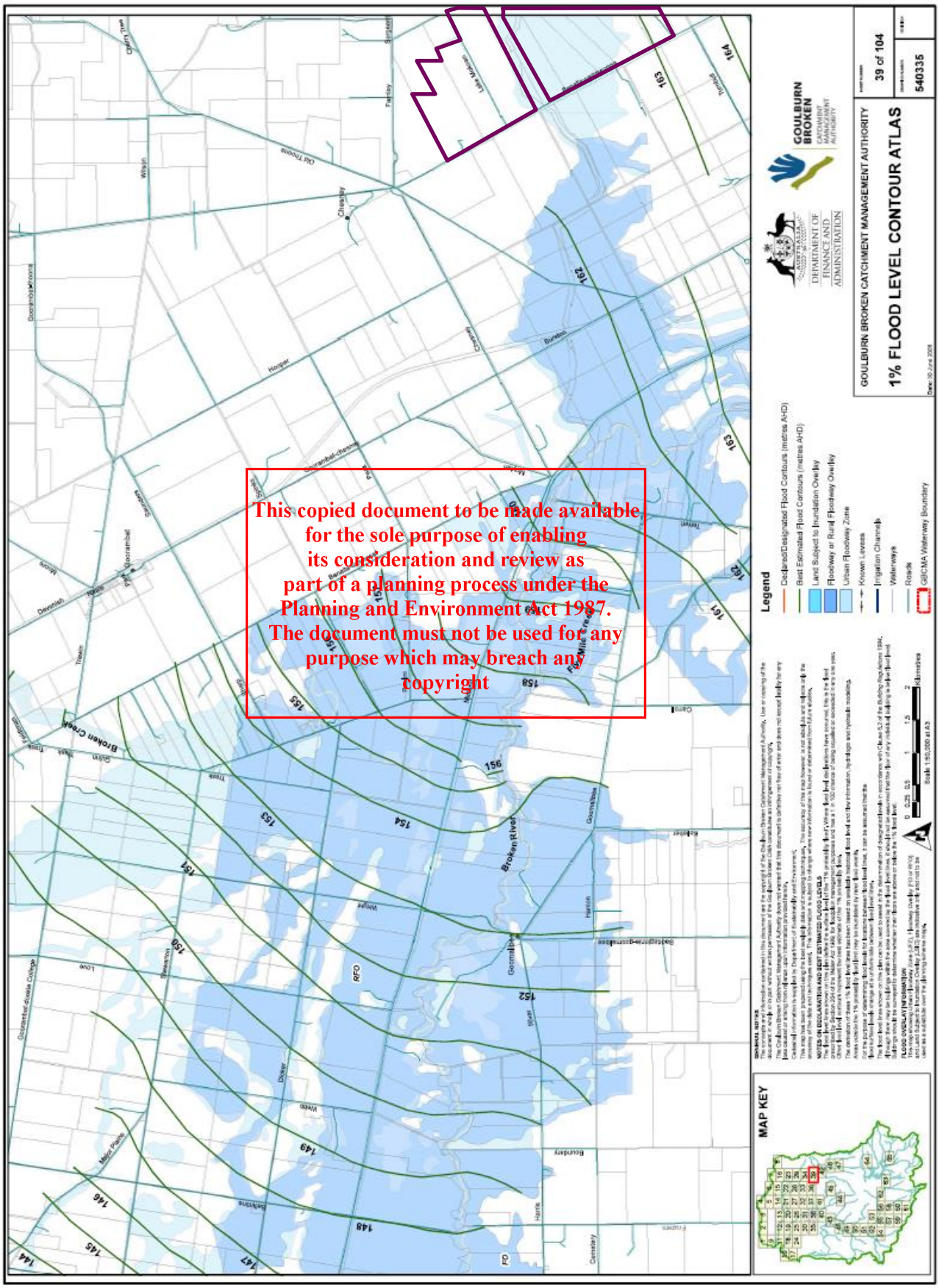
Conversion from farming activities to a solar farm may ultimately reduce the risk of surface water contamination following construction, once the site is operational and the ground conditions have been re-established with appropriate drainage. However, the project may present a risk to surface water quality for the Stockyard Creek and Broken River during the construction phase.

The following measures will be included in the Environmental Management Plan and Construction Environmental Management Plan.

- Construction activities will be effectively managed by best practice pollution prevention strategies in accordance with EPA publications *480 Environmental Guidelines for Major Construction Sites and 275, Construction Techniques for Sediment Pollution Control and International Erosion and Sediment Control Association (IECA) Australasia guidelines.*
- Construction activities will also adhere to a site-specific erosion and sediment control plan.
- Works on and around waterways will only occur when they are dry.
- Areas of disturbed ground will be quickly reinstated following completion. Optimum surface treatments will be selected to fast track stabilisation of surfaces and prevention of erosion during establishment.
- Sediment control fences will be employed downstream of work areas.
- Sedimentation ponds will be constructed to collect silty runoff (the use of flocculants will also be considered where appropriate).
- Diversion bunds will be used to direct water to sedimentation ponds for treatment. The height and alignment of bunds will be considered so as not to increase the risk of flooding.
- Works with a high risk of causing erosion will be scheduled during the driest periods.
- Soils will be quickly remediated with topsoil (where compacted or leached), seeded and over-seeded during the correct season.
- Mulches and soil binders (e.g. hydromulch) will be considered for newly exposed embankments, slopes and longer-term stockpiles.
- Any man-made impoundment or conveyance structures (e.g. irrigation storage ponds and channels) will be assessed for their necessity, environmental impact and ongoing safety.
- Surface treatments for drainage infrastructure will be designed to resist scour and erosion. drainage will be designed to limit flow velocities to prevent scour.
- Discharge of channelised flow shall be via the use of level spreaders or direct outfall into Stockyard Creek with suitable erosion protection.

Appendix A

1% AEP Flood Map



Appendix B

GBCMA Response

Our Ref: GBCMA-F-2019-00089
Document No: 1

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Date: 27 February 2019

Mr Tony Barrett
AECOM Australia Pty Ltd
727 Collins Street
Melbourne VIC 3008 tony.barrett@aecom.com

Dear Mr Barrett

Floodplain Management Advice for
Proposed Solar Farm
892 Benalla-Yarrawonga Road Goorambat

Thank you for your application dated 7 February 2019, received by the Goulburn Broken CMA on 7 February 2019, regarding the above matter.

The Goulburn Broken CMA's assessment of the above information has determined that the proposed development location is covered by the Farming Zone, Road Zone - Category 1 in the Benalla Planning Scheme.

The Goulburn Broken CMA does not have any flood or detailed ground level information for the site. However, information derived from the 1993 flood (which is representative of the 1% AEP flood adjacent to the site is shown in **Figure 1**. This figure also depict designated waterways that traverses through the site, which should remain free from obstruction.

In the light of the above information, the Goulburn Broken CMA would not object to the proposed solar farm, **subject to the following conditions**:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 1.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 450 millimetres above general surrounding ground level.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

Note, where access roads cross the waterway shown in Figure 1 a works on waterways permit will be required from the Goulburn Broken CMA.

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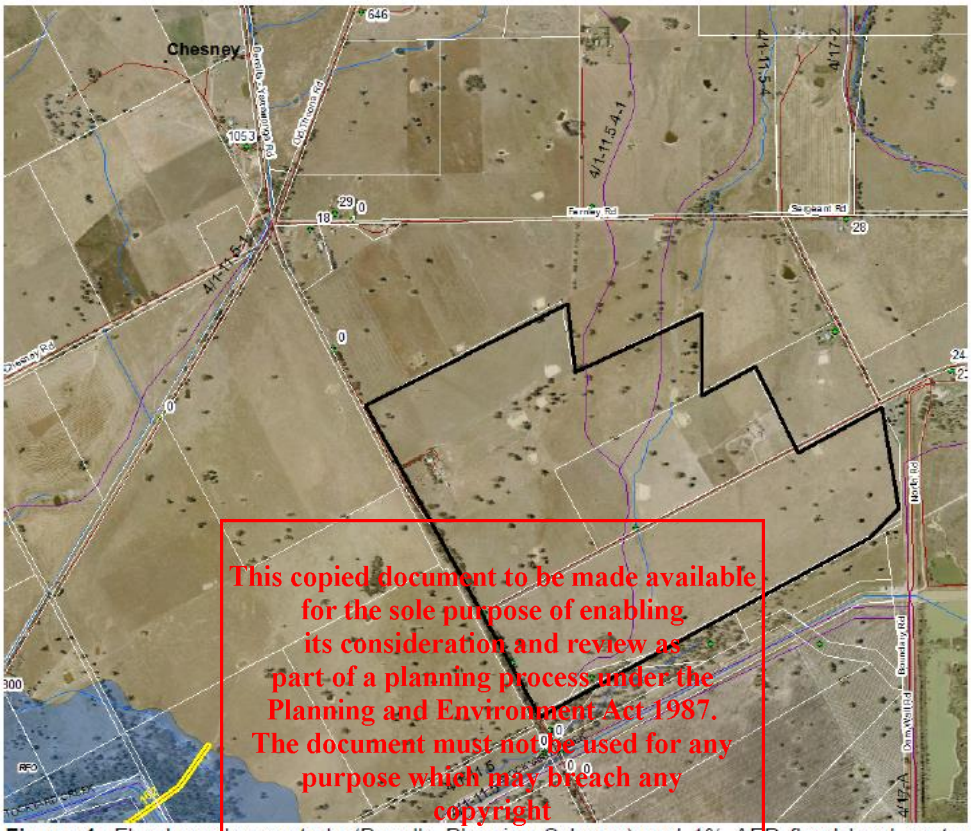

Figure 1: Flood overlay controls (Benalla Planning Scheme) and 1% AEP flood level contour adjacent to the site.

Please Note:

- This document contains floodplain management advice only. It does not constitute approval from any other statutory body. It is your responsibility to obtain any other required approvals.
- The 100-year ARI flood is not the maximum possible flood. There is always a possibility that a flood larger in height and extent, than the 100-year ARI flood, may occur in the future.

If you have any queries, please contact me on **(03) 5822 7700**. To assist in handling any enquiries please quote **GBCMA-F-2019-00089** in your correspondence. Please note that all electronic correspondence should be directed to planning@gbcma.vic.gov.au.

Yours sincerely

Guy Tierney
Statutory Planning and Floodplain Manager

Information contained in this correspondence is subject to the definitions and disclaimers below.

Definitions and Disclaimers

1. The area referred to in this letter as the 'proposed development location' is the land parcel(s) that, according to the Authority's assessment, represent(s) the location identified by the applicant. The identification of the 'proposed development location' on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or local government authority.
2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.
3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).
4. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
5. **AHD** as Australian Height Datum - is the adopted national height datum that generally relates to height above mean sea level. Elevation is in metres.
6. No warranty is made as to the accuracy or liability of any studies, estimates, calculations, opinions, conclusions, recommendations (which may change without notice) or other information contained in this letter and, to the maximum extent permitted by law, the Authority disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any recipient or other person through relying on anything contained in or omitted from this letter.
7. This letter has been prepared for a proposed **Solar Farm** and is for the use only of the party to whom it is addressed and no responsibility is accepted to any third party for the whole or any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority's written approval of the form and context in which it will appear.
8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
9. ***The responsible authority may use this information within 90 days of this letter.***

Our Ref: GBCMA-F-2019-00090
Document No: 1

Date: 28 February 2019

Mr Tony Barrett
AECOM Australia Pty Ltd
727 Collins Street
Melbourne VIC 3008 tony.barrett@aecom.com

Dear Mr Barrett

Floodplain Management Advice for
Proposed Solar Farm
Lot 4, Plan PS318659
226 Murray Road Benalla Vic 3672

Thank you for your application dated 07 February 2019, received by the Goulburn Broken CMA on 07 February 2019, regarding the above matter.

The Goulburn Broken CMA's assessment of the above information has determined that the proposed development location is covered by the Industrial 1 Zone, Industrial 2 Zone, Road Zone - Category 1, Road Zone - Category 2 in the Benalla Planning Scheme.

The Authority's best estimate of the 1% AEP flood levels for the location described above varies from 165.5 and 168.5 metres AHD (see Figure 1), which was established from limited 1993 flood levels. The Authority has no detailed ground level information to determine depths of flooding over the site.

Figure 1 also shows a number of designated waterways that traverse through the site. In this regard, the waterways should remain free from obstruction with vegetated corridors.

In the light of the above information, the Goulburn Broken CMA would not object to the proposed solar farm, **subject to the following conditions**:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 1.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level as shown in Figure 1.

www.gbcma.vic.gov.au

SHEPPARTON
Head Office
168 Welsford Street
PO Box 1752
Shepparton VIC 3632
Tel: (03) 5822 7700
Fax: (03) 5831 6254

BENALLA
89 Sydney Road
PO Box 124
Benalla VIC 3672
Tel: (03) 5822 7700

YEA
5/10 High Street
Yea VIC 3717
Tel: (03) 5797 4400

3. The corridors along all waterways, as shown in Figure 1, shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses waterways, as shown in Figure 1, the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

Figure 1: Showing estimated 1% AEP flood contours and designated waterways.

Note, where access roads cross the waterway shown in Figure 1 a works on waterways permit will be required from the Goulburn Broken CMA.

Please Note:

- This document contains floodplain management advice only. It does not constitute approval from any other statutory body. It is your responsibility to obtain any other required approvals.
- The 100-year ARI flood is not the maximum possible flood. There is always a possibility that a flood larger in height and extent, than the 100-year ARI flood, may occur in the future.

If you have any queries, please contact me on **(03) 5822 7700**. To assist in handling any enquiries please quote **GBCMA-F-2019-00090** in your correspondence. Please note that all electronic correspondence should be directed to planning@gbcma.vic.gov.au.

Yours sincerely

Guy Tierney
Statutory Planning and Floodplain Manager

Information contained in this correspondence is subject to the definitions and disclaimers below.

Definitions and Disclaimers

1. The area referred to in this letter as the 'proposed development location' is the land parcel(s) that, according to the Authority's assessment, represent(s) the location identified by the applicant. The identification of the 'proposed development location' on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or local government authority.
2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.
3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).
4. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
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7. This letter has been prepared for a proposed Solar Farm and is for the use only of the party to whom it is addressed and no responsibility is accepted to any third party for the whole or any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority's written approval of the form and context in which it will appear.
8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
9. ***The responsible authority may use this information within 90 days of this letter.***

Taggert, Natalie

From: Barrett, Tony
Sent: Thursday, 27 August 2020 9:30 AM
To: Guy Tierney
Cc: Kasraie, Leila; Butler, Kristina
Subject: RE: Use of 300mm Freeboard for Inverters and Transformer Blocks

Thanks Guy,

That's correct. Our modelling and flood risk assessments are using the gauge data from the Stockyard Creek. This gauge provides a level for the major flooding in 1993 which was considered equivalent to the 1% AEP event for this catchment.

Thanks again,
Tony

Tony Barrett
Principal Consultant Water
D +61 3 9653 8073
Tony.Barrett@aecom.com

AECOM
Collins Square, Level 10, Tower Two 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

From: Guy Tierney <guyt@gbcma.vic.gov.au>
Sent: Wednesday, 26 August 2020 9:15 PM
To: Barrett, Tony <Tony.Barrett@aecom.com>
Cc: Kasraie, Leila <leila.kasraie@aecom.com>; Butler, Kristina <Kristina.Butler@aecom.com>
Subject: [EXTERNAL] RE: Use of 300mm Freeboard for Inverters and Transformer Blocks

Dear Tony

The logic is that if you have available flood level information then the freeboard is the usual 300mm above the applicable flood. If you have such information then use it.

In the absence of flood information and allowing for those localised severe thunderstorm episodes due the climate change the allow 450mm above the general surround ground level. This only allows for 150mm of overland localised flooding with 300mm freeboard.

Sincerely

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Guy Tierney
Statutory Planning and
Floodplain Manager
Floodplain advice application forms; Works on waterways application forms
P | 03 5822 7700 M | 0408 359 991
E | guyt@gbcma.vic.gov.au W | www.gbcma.vic.gov.au
Workdays: Monday to Friday

I acknowledge the Traditional Owners of the land on which we work.
I pay my respects to their Elders; past, present and emerging and our Indigenous staff.

From: Barrett, Tony <Tony.Barrett@aecom.com>
Sent: Wednesday, 26 August 2020 4:10 PM
To: Guy Tierney <guyt@gbcma.vic.gov.au>
Cc: Kasraie, Leila <leila.kasraie@aecom.com>; Butler, Kristina <Kristina.Butler@aecom.com>
Subject: Use of 300mm Freeboard for Inverters and Transformer Blocks

Hi Guy,

Great to catch up again…. T-Minus 2 weeks and hopefully things will be a 'little' more normal.

As discussed, the two floodplain advice application responses we received in February 2019 (attached) had slightly different recommendations for the elevation of transformers and inverters above the predicted 1% AEP flood level (one requiring 300mm and one for 450mm).

Based on our conversation, it's my understanding that you would accept the use of a 300mm freeboard requirement for these two neighbouring sites.

However, please let me know in the meantime if you require any further information to satisfy this decision.

Many thanks,
Tony

Tony Barrett
Principal Consultant Water
D +61 3 9653 8073
Tony.Barrett@aecom.com

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Collins Square, Level 10, Tower Two 727 Collins Street, Melbourne, VIC 3008
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aecom.com

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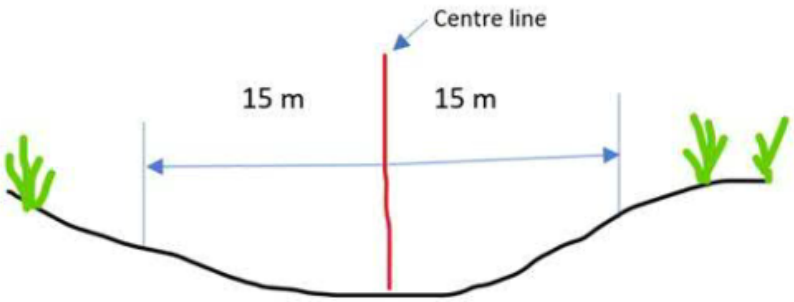
2

Barrett, Tony

From: Russel Haque <russelh@gbcma.vic.gov.au>
Sent: Wednesday, 12 June 2019 2:56 PM
To: Barrett, Tony
Cc: Guy Tierney
Subject: GBCMA-F-2019-00089 & GBCMA-F-2019-00090

Hi Tony,
Referring to the subject mentioned applications, we have reviewed our responses and setback distances from the waterways. Please see the figure
below:



A 15 metres setback distance is required from the centreline of the waterways i.e. 30 metres corridors for the waterways. This corridor needs to be maintained for the waterways throughout the project areas for both solar farm projects.

Please let me know if you need to know anything further details.

Sincerely

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Russel Haque
Floodplain and River Health Projects Officer

P | 03 5822 7724 M | 0407 199 954
E | russelh@gbcma.vic.gov.au W | www.gbcma.vic.gov.au
My work days are Monday to Fridays, 8:30-5:00pm

1

Appendix C

GMW Waterway Determination Response

GOULBURN-MURRAY WATER

Our Ref: #A3638804
Your Ref: PN8195460

30 July 2019

Tony Barrett
AECOM - c/o Link Development Pty Ltd
Collins Square, Level 10, Tower 2
727 Collins St.
MELBOURNE VIC 3008

Lake Mokoan Solar Farm Proposal

Dear Tony,

I refer to a recent inspection at the properties listed below by Goulburn-Murray Water Diversion Inspector Ben Ives.

Lot 1, Plan of Subdivision 625748, Parish of Goorambat
Lot 1, Title Plan 173518, Parish of Goorambat
Lot 2, Plan of Subdivision 625748, Parish of Goorambat

The purpose of this inspection was to carry out a "Waterway Determination" on the above described properties to identify any existing waterways.

This inspection identified a waterway commencing at the point identified by co-ordinates Zone 55, Eastings: 411559, Northings: 5966301 on lot 1 TP 819039, Parish of Goorambat.

A "Waterway Determination" is made by matching criteria used by Goulburn-Murray Water to determine if there is a waterway/watercourse at the site, as defined under Section 3 of the Water Act 1989.

As a result of the inspection, our findings show there is a waterway at the specific site inspected on this property at the above coordinates. It was identified during this inspection that the waterway also traverses the properties described above that are subject to the proposed development. In accordance with your advice, the purpose of the Waterway Determination is in relation to a proposed Planning Permit application.

There may be additional drainage lines, depressions or gullies that may require protection from development by means of setbacks. A map showing the location of the significant drainage lines, depressions or gullies is attached for your information.

PO Box 165 Tatura Victoria 3616 Australia | Email reception@gmwater.com.au | Phone 1800 013 357 | Website www.gmwater.com.au

Additionally, please be advised that the application has not been assessed for potential impacts on surface or groundwater quality and this letter is not prior written approval of the development proceeding.

GMW's interest is with the protection of surface water and groundwater and an assurance that proposed developments will not impact detrimentally on the flow and quality of surface water and groundwater.

Any proposed works planned on the waterway will require approval in the form of a Works Licence from Goulburn-Murray Water if the works relate to the 'take and use' of water.
Approval from the Goulburn Broken Catchment Management Authority is required for any other works.

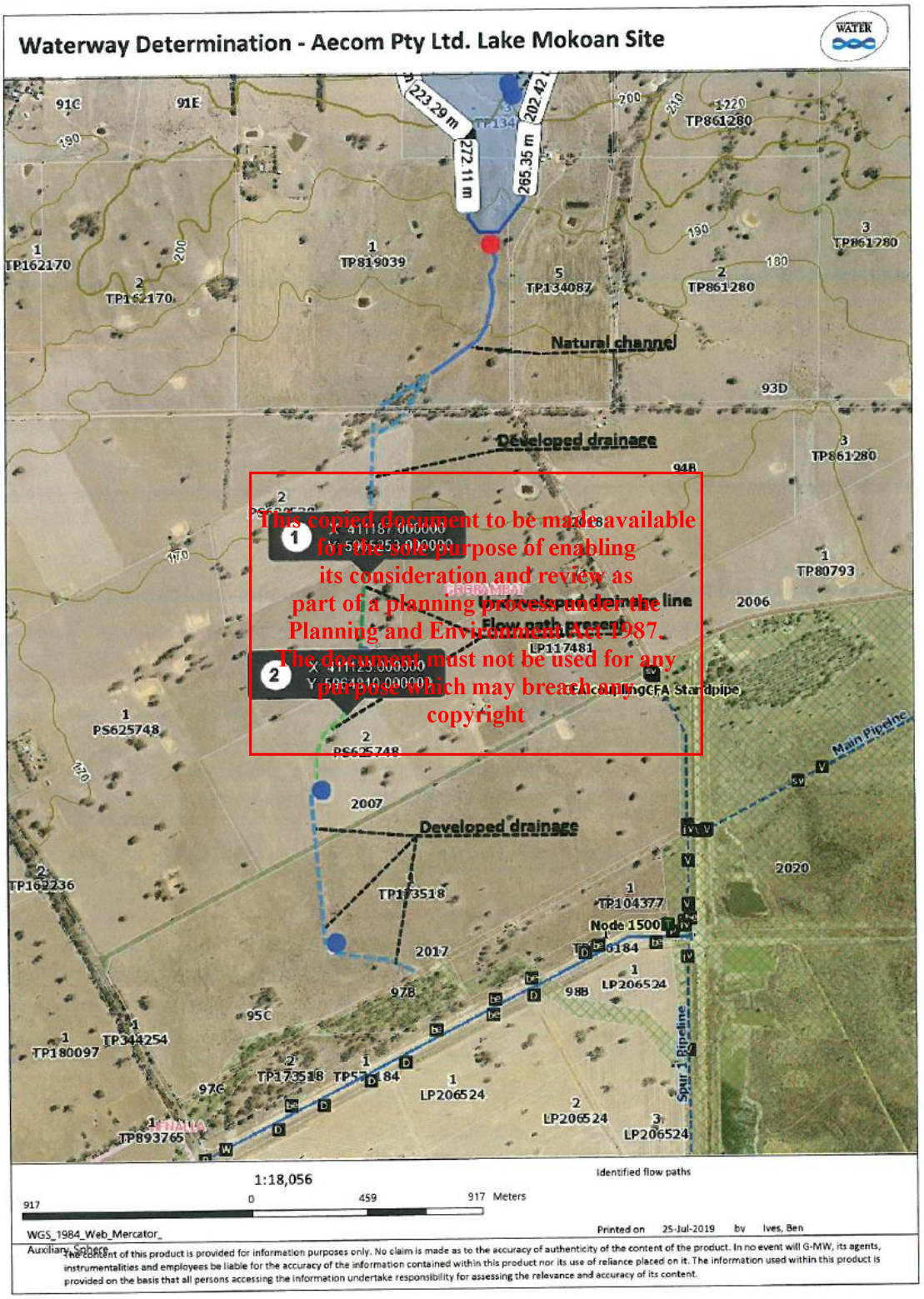
You are advised that you may require a planning permit from your Local Shire Council for the building and subsequent works and it is your responsibility to obtain permits as necessary.

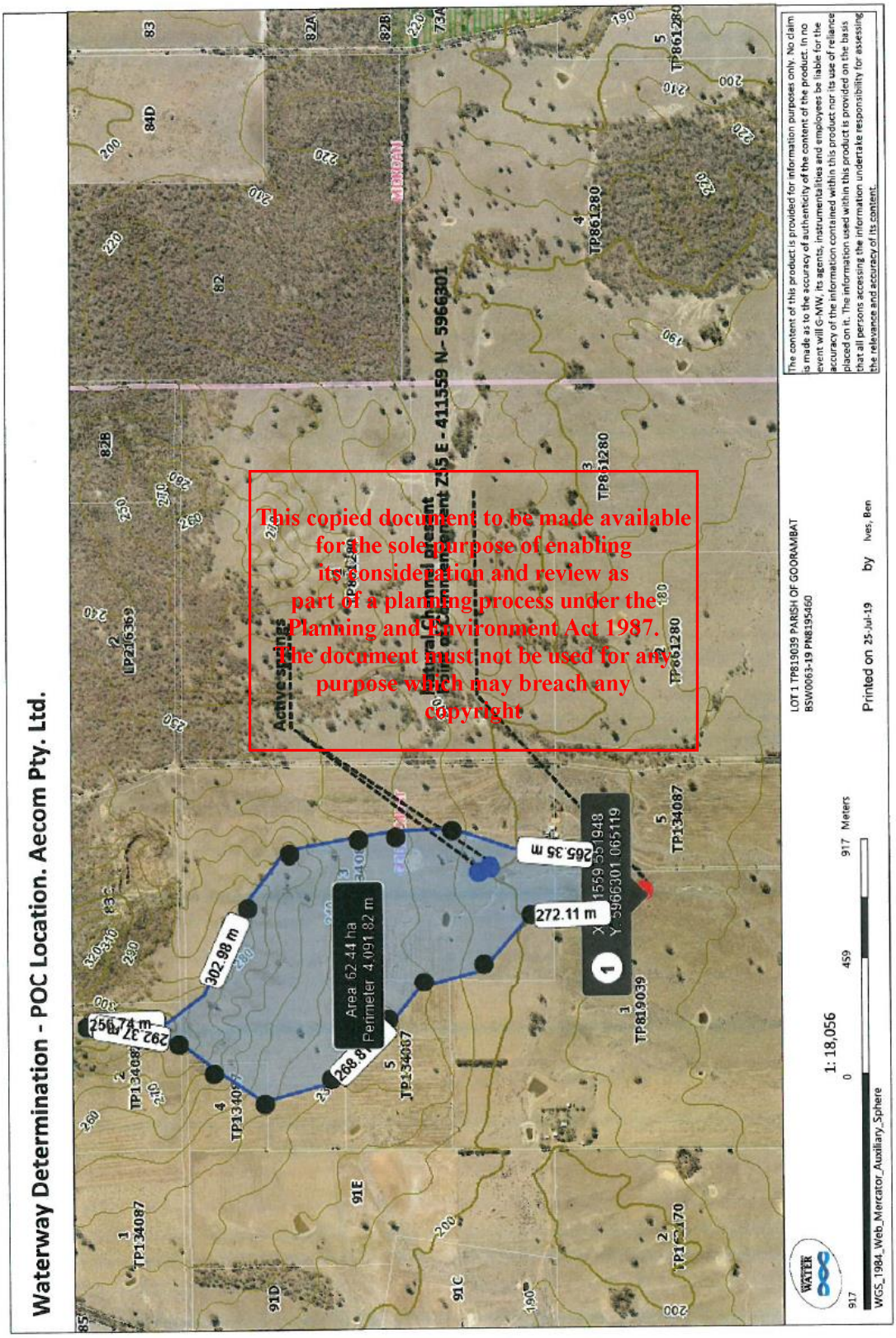
Should you require any further information on this inspection please do not hesitate to contact Diversion Inspector Ben Ives at the Shepparton office of Goulburn-Murray Water on (03) 58 227 958.

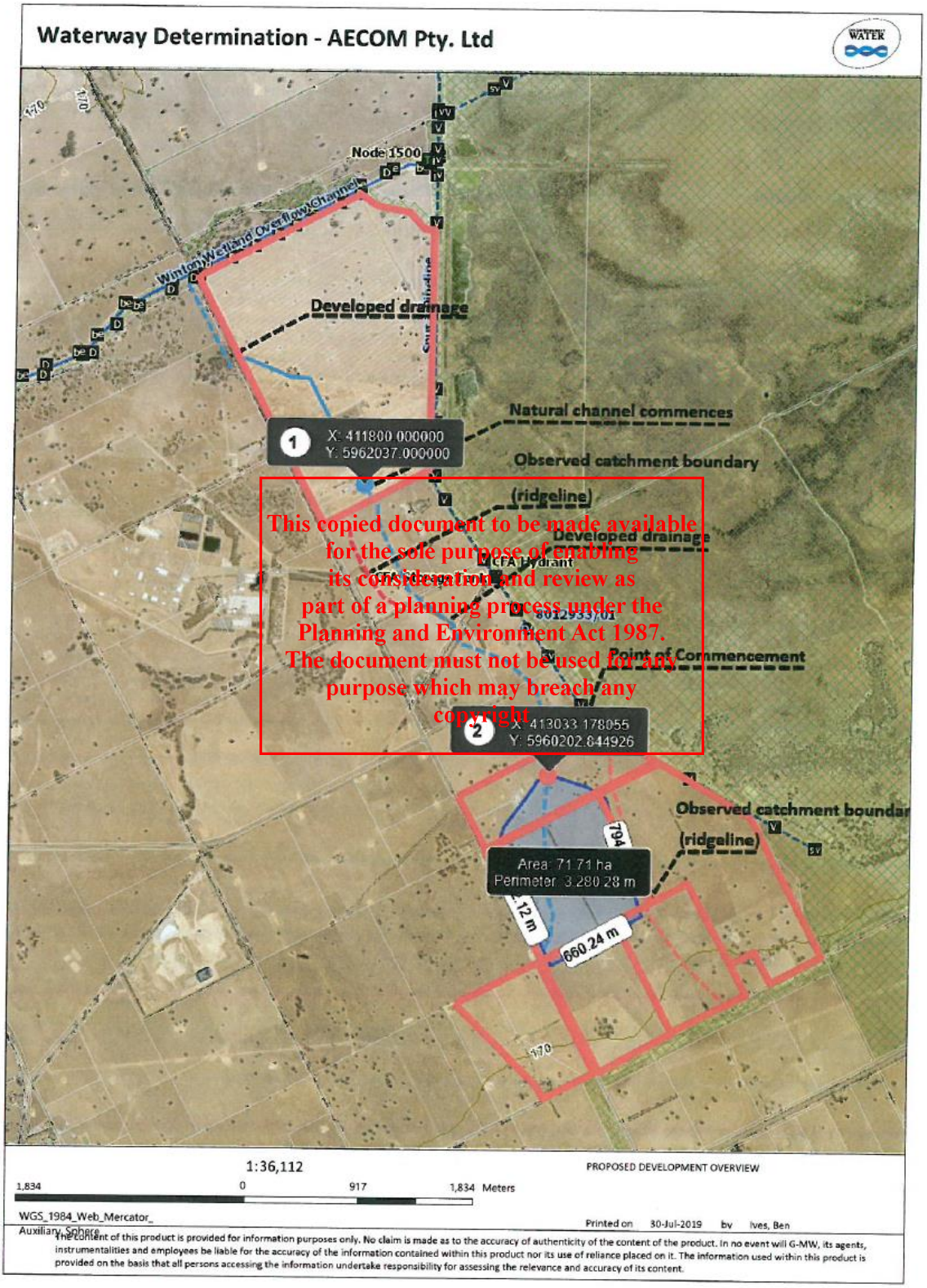
Yours sincerely

Cathy Wood
CUSTOMER SERVICE MANAGER
DIVERSIONS CENTRAL

cc Goulburn Broken Catchment Managent Authority
cc Benalla Rural City council
cc Ranine McKenzie – GMW Statutory Planning Unit







AECOM Imagine it. Delivered.

West Mokoan Solar Farm

892 Benalla-Yarrawonga Development Pty Ltd

10-Jun-2021

Project Amendment Addendum

Surface Water Assessment

Project Amendment Addendum

Surface Water Assessment

Client: 892 Benalla-Yarrawonga Development Pty Ltd

ABN: 628034300

Prepared by

AECOM Australia Pty Ltd
Level 10, Tower Two, 727 Collins Street, Melbourne VIC 3008, Australia
T +61 3 9653 1234 F +61 3 9654 7117 www.aecom.com
ABN 20 093 846 925

10-Jun-2021

Job No.: 60597809

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

1.0 Introduction

1.1 Planning Permit Application

AECOM Australia Pty Ltd (AECOM) continues to act on behalf of the applicant, 892 Yarrawonga Development C/- South Energy, in relation to Planning Permit Application No. PA2000978 for the West Mokoan Solar Farm.

Planning Permit Application No. PA2000978 was submitted to Department of Environment, Water, Planning and Land (DELWP) on 07 October 2020. The Application is for the use and development of a Renewable Energy Facility and Utility Installation (solar farm and energy storage) and associated buildings and works, removal of native vegetation, display of business identification signage, removal and creation of easements and the creation or alteration of access to a Road Zone Category 1 (the Project).

This letter is an addendum to the Surface Water Assessment (Date 21/09/20) (*The Report*).

1.2 Requests for Further Information

Pursuant to Section 54 of the *Planning and Environment Act 1987 (P&E Act),* DELWP issued a Request for Further Information (RFI) dated 5 November 2020. A separate RFI was issued from DELWP – Hume Region, on 26 November 2020. There were no matters raised in either of the RFIs in relation to or concerning surface water.

1.3 Project Amendments

As a result of changes to the Project area and technical requirements, and in response to the RFI's, a formal amendment to the Planning Permit Application is being sought, pursuant to Section 50 of the *P&E Act.* The changes to the project are summarised below:

- ***Change to the substation location***

  Due to AusNet requirements, the substation has been relocated from 892 Benalla-Yarrawonga Road (Lot 1 PS625748), on the northern side of Lake Mokoan Road to the southern side of Lake Mokoan Road on land at Benalla-Yarrawonga Road (Lot 1 TP173518). As a result, the vehicle access gates along Lake Mokoan Road have been altered – with the northern access point to the (former) substation removed and a new access point for the new substation added. Furthermore, the location of solar panels and associated equipment has changed, with solar panels now located on the former substation site.

- ***Change to native vegetation retention and removal***

  In response to the RFI from DELWP – Hume Region (dated 26 November 2020), additional habitat assessments and native vegetation assessments have been undertaken, and the solar farm layout has been revised to optimise native vegetation retention. Previously, a total of 2.868 ha of native vegetation was proposed to be removed, which included 43 scattered trees (39 large trees and 4 small trees). The revised solar layout proposes a total of 1.891 ha of native vegetation to be removed which includes 28 scattered trees (26 large trees and 2 small trees). Refer to the Flora and Fauna Impact Assessment for full details.

- ***Reduction in Project area and capacity***

  Land at 81 Lake Mokoan (Lot 2 PS625748) is now excluded from the project. The dwelling at 81 Lake Mokoan Road (proposed to be used for construction purposes) is now excluded from the Project and maintains its current use as a dwelling on private land and a 'sensitive receptor'.

  As a result of the changes described above, the capacity (energy generation) of the solar farm has been slightly reduced, which is summarised in Table 1.

Table 1 Comparison of Solar Energy Facility Details

Item	Previous Concept Plan	Revised Concept Plan
Total Project Area (ha)	467.2	426.4
Direct Current Capacity (MW)	245.19	233.74
Number of PCUs	60	57
Total Modules	557,256	531,216

2.0 Assessment

A review of the revised Concept Plan (60597809-DWG-EL-0003_Rev11 dated 3/6/2021), presented in Appendix A was undertaken to confirm any surface water impacts as a result of the changes to the project described above.

- ***Change to the substation location***

  The Report provides high level guidance for the siting of a substation (Section 5.3). This guidance was informed by the Goulburn Broken Catchment Management Authority (GBCMA) who advised that finished floor levels must be constructed to a minimum of 300mm above the 1% AEP Flood Level and set back from designated waterways. The revised substation location is set back from the designated waterways and will still allow for the substation design to meet these requirements.

- ***Change to native vegetation retention and removal***

  The Report outlines the impacts of vegetation removal and highlights the importance of timely land remediation (Section 5.7). Retaining more native vegetation across the site could potentially reduce the area of soil disturbance and therefore, sedimentation impacts.

- ***Reduction in Project area and capacity***

  The project area has been revised following the removal of land at 81 Lake Mokoan (Lot 2 PS625748) resulting in minor changes to the layout of solar energy infrastructure (Table 1). The revised layout presented in Appendix A and B does not encroach on the designated waterways or their agreed setbacks. The siting of solar energy infrastructure has also been designed in accordance with the requirements of the GBCMA.

3.0 Conclusion

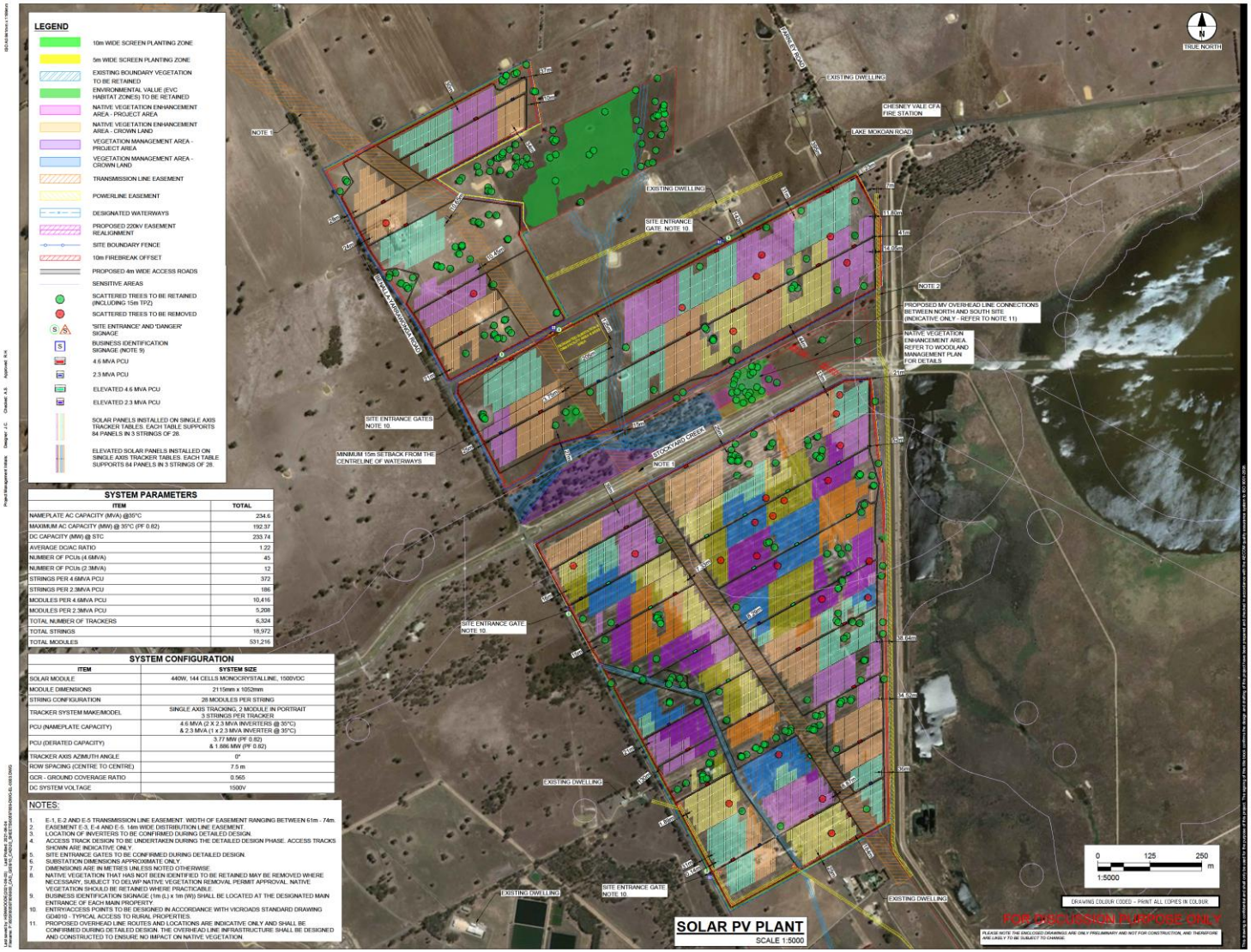
The proposed amendments to the Project area and technical requirements in response to the RFI's raised by DELWP, dated 5 November 2020, and DELWP – Hume Region, on 26 November 2020, have been reviewed against the Surface Water Assessment (Date 21/09/20).

Based on the planning amendments outlined herein, it is proposed the Surface Water Assessment remains unchanged. It should also be noted that the scope, assumptions, and limitations presented in the Surface Water Assessment are applicable to the conclusions presented in this addendum.

Appendix A

Revised Concept Plan

ADVERTISED PLAN



SYSTEM PARAMETERS

ITEM	TOTAL
NAMEPLATE AC CAPACITY (MVA) @35°C	234.6
MAXIMUM AC CAPACITY (MW) @ 35°C (PF 0.82)	192.37
DC CAPACITY (MW) @ STC	233.74
AVERAGE DC/AC RATIO	1.22
NUMBER OF PCUs (4.6MVA)	45
NUMBER OF PCUs (2.3MVA)	12
STRINGS PER 4.6MVA PCU	372
STRINGS PER 2.3MVA PCU	186
MODULES PER 4.6MVA PCU	10,416
MODULES PER 2.3MVA PCU	5,208
TOTAL NUMBER OF TRACKERS	6,324
TOTAL STRINGS	18,972
TOTAL MODULES	531,216

SYSTEM CONFIGURATION

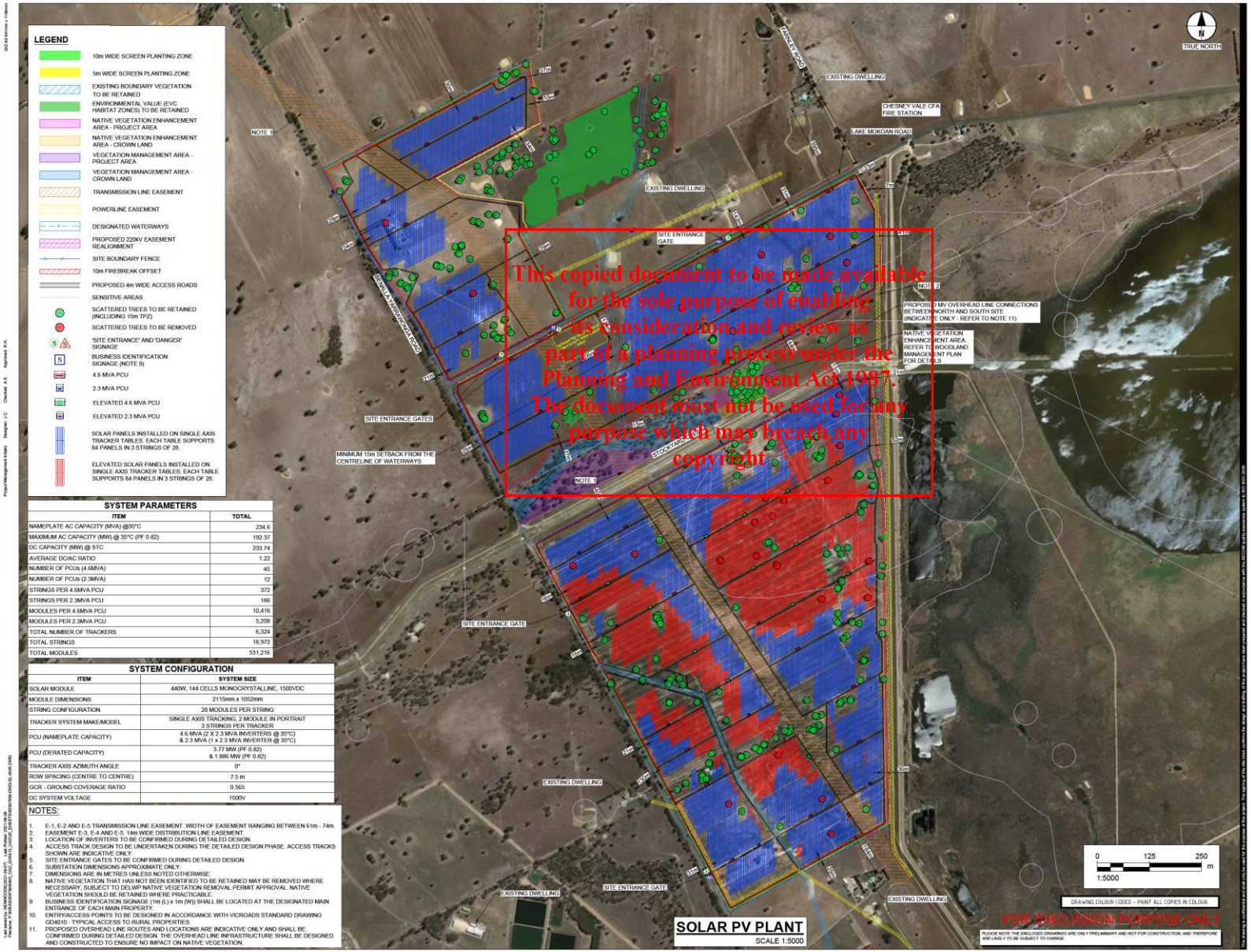
ITEM	SYSTEM SIZE
SOLAR MODULE	440W, 144 CELLS MONOCRYSTALLINE, 1500VDC
MODULE DIMENSIONS	2115mm x 1052mm
STRING CONFIGURATION	28 MODULES PER STRING
TRACKER SYSTEM MAKE/MODEL	SINGLE AXIS TRACKING, 2 MODULE IN PORTRAIT 3 STRINGS PER TRACKER
PCU (NAMEPLATE CAPACITY)	4.6 MVA (2 X 2.3 MVA INVERTERS @ 35°C) & 2.3 MVA (1 x 2.3 MVA INVERTER @ 35°C)
PCU (DERATED CAPACITY)	3.77 MW (PF 0.82) & 1.886 MW (PF 0.82)
TRACKER AXIS AZIMUTH ANGLE	0°
ROW SPACING (CENTRE TO CENTRE)	7.5 m
GCR - GROUND COVERAGE RATIO	0.565
DC SYSTEM VOLTAGE	1500V

NOTES:

1. E-1, E-2 AND E-5 TRANSMISSION LINE EASEMENT. WIDTH OF EASEMENT RANGING BETWEEN 61m - 74m.
2. EASEMENT E-3, E-4 AND E-5. 14m WIDE DISTRIBUTION LINE EASEMENT.
3. LOCATION OF INVERTERS TO BE CONFIRMED DURING DETAILED DESIGN.
4. ACCESS TRACK DESIGN TO BE UNDERTAKEN DURING THE DETAILED DESIGN PHASE. ACCESS TRACKS SHOWN ARE INDICATIVE ONLY.
5. SITE ENTRANCE GATES TO BE CONFIRMED DURING DETAILED DESIGN.
6. SUBSTATION DIMENSIONS APPROXIMATE ONLY.
7. DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
8. NATIVE VEGETATION THAT HAS NOT BEEN IDENTIFIED TO BE RETAINED MAY BE REMOVED WHERE NECESSARY, SUBJECT TO DELWP NATIVE VEGETATION REMOVAL PERMIT APPROVAL. NATIVE VEGETATION SHOULD BE RETAINED WHERE PRACTICABLE.
9. BUSINESS IDENTIFICATION SIGNAGE (1m (L) x 1m (W)) SHALL BE LOCATED AT THE DESIGNATED MAIN ENTRANCE OF EACH MAIN PROPERTY.
10. ENTRY/ACCESS POINTS TO BE DESIGNED IN ACCORDANCE WITH VICROADS STANDARD DRAWING GD4010 - TYPICAL ACCESS TO RURAL PROPERTIES.
11. PROPOSED OVERHEAD LINE ROUTES AND LOCATIONS ARE INDICATIVE ONLY AND SHALL BE CONFIRMED DURING DETAILED DESIGN. THE OVERHEAD LINE INFRASTRUCTURE SHALL BE DESIGNED AND CONSTRUCTED TO ENSURE NO IMPACT ON NATIVE VEGETATION.

Appendix B

Elevated Panels Plan



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NOTES:

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GRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

PLEASE NOTE THE ENCLOSED DRAWINGS ARE ONLY PRELIMINARY AND NOT FOR CONSTRUCTION, AND THEREFORE ARE LIKELY TO BE SUBJECT TO CHANGE.

AECOM

PROJECT
WEST MOKOAN SOLAR FARM CONCEPT DESIGN
BENALLA
Victoria

CLIENT
892 YARRAWONGA DEVELOPMENT Pty Ltd
Level 19, 303 Collins Street
Melbourne, VIC 3000

South Energy

CONSULTANT
AECOM Australia Pty Ltd
A.B.N 20 093 846 925
COLLINS SQUARE, LEVEL 10, TOWER TWO
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SHEET TITLE
WEST MOKOAN SOLAR FARM ELEVATED VS NON-ELEVATED

SHEET NUMBER
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West Mokoan Solar Farm
South Energy
21 September 2020

West Mokoan Solar Farm

Surface Water Assessment

West Mokoan Solar Farm

Surface Water Assessment

Client: 892 Yarrawonga Development Pty Ltd

ABN: 30 628 034 300

Prepared by

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21-Sep-2020

Job No.: 60597809

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Table of Contents

1.0 Introduction

1.1 Site Context

AECOM Australia Pty Ltd is preparing a planning permit application on behalf of 892 Yarrawonga Development Pty Ltd (South Energy) (the Applicant) for the construction of a solar farm facility on land adjacent to Benalla-Yarrawonga Road and Lake Mokoan Benalla, Victoria. The site and lot address are presented in Table 1.

Table 1 Site addresses included in the development

Site Address	892 Benalla-Yarrawonga Road, Goorambat 81 Lake Mokoan Road, Goorambat Benalla - Yarrawonga Road, Benalla 616 Benalla - Yarrawonga Road,
Legal Description	Lot 1 PS625748F Lot 2 PS625748F Lot 1 TP173518C Lot 1 TP104377 Lot 1 LP206524H 98B PP2704 and Lots 2-5 LP206524H

The land is currently used for broadacre farming, located within a Farming Zone (FZ), in accordance with the Benalla Planning Scheme. It is located approximately 5 kilometres north-east of the town centre of Benalla, and approximately 8 kilometres south-east of the township of Goorambat. Figure 1 provides the site context and proximity to the town of Benalla and the Winton Wetlands.

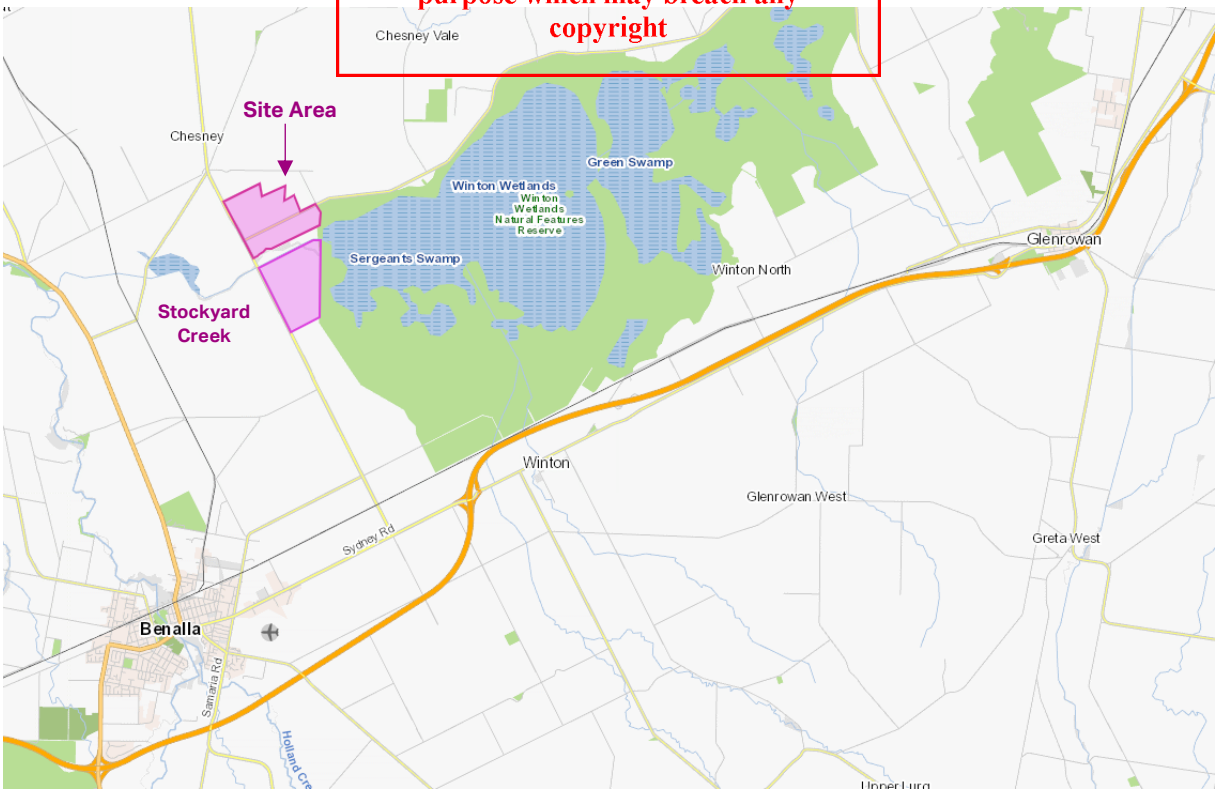


Figure 1 Site Context and Surrounding Features (Source: VicPlan 2019)

1.2 Scope of Work

The purpose of this Surface Water Assessment is to define, at a high level, the potential changes in water quality, water quantity and stream stability as a result of the proposed development. It also outlines strategies to mitigate, minimise and manage the potential impacts associated with changes in surface water quality and quantity.

The scope of this high-level surface water assessment is to:

- engage the local CMA to discuss potential flooding implications of development;
- obtain and collate relevant GIS data from public sources;
- identify all watercourses and other surface water bodies within and adjacent to the study area;
- provide high level commentary on the existing site conditions and likely changes (if at all) in water quantity, quality and stream stability as a result of the proposed development; and
- broadly outline strategies to minimise and manage any likely adverse impacts resulting from the discharge of stormwater from the site to the surface water receiving environment.

2.0 Existing Waterways and Surface Water Features

2.1 Catchment Context

The study area is located in a sub-catchment of Broken River; which lies approximately 4.8km west of the site. East of the site is the Winton Wetlands Natural Features Reserve, formally known as Lake Mokoan. This wetlands reserve is located on a recently decommissioned artificial lake that was previously fed with water from the Broken River via the Lake Mokoan Inlet Channel.

Historically, outflow from Lake Mokoan was conveyed along the Stockyard Creek and back into the Broken River, west of the study area. However, as part of Lake Mokoan decommissioning works completed by Goulburn Murray water, some sections of the outlet channel/Stockyard creek channel have been regraded (reverse graded) to allow water to be diverted from the Broken River and to flow in the opposite direction towards the Lake Mokoan Diverters Pipeline Pumping Station located immediately west of the dam wall.

The Stockyard Creek forms a natural low point through the local catchment with gentle gradients extending to the north of the study area.

Figure 2 provides an overview of the catchment context and surrounding waterways.

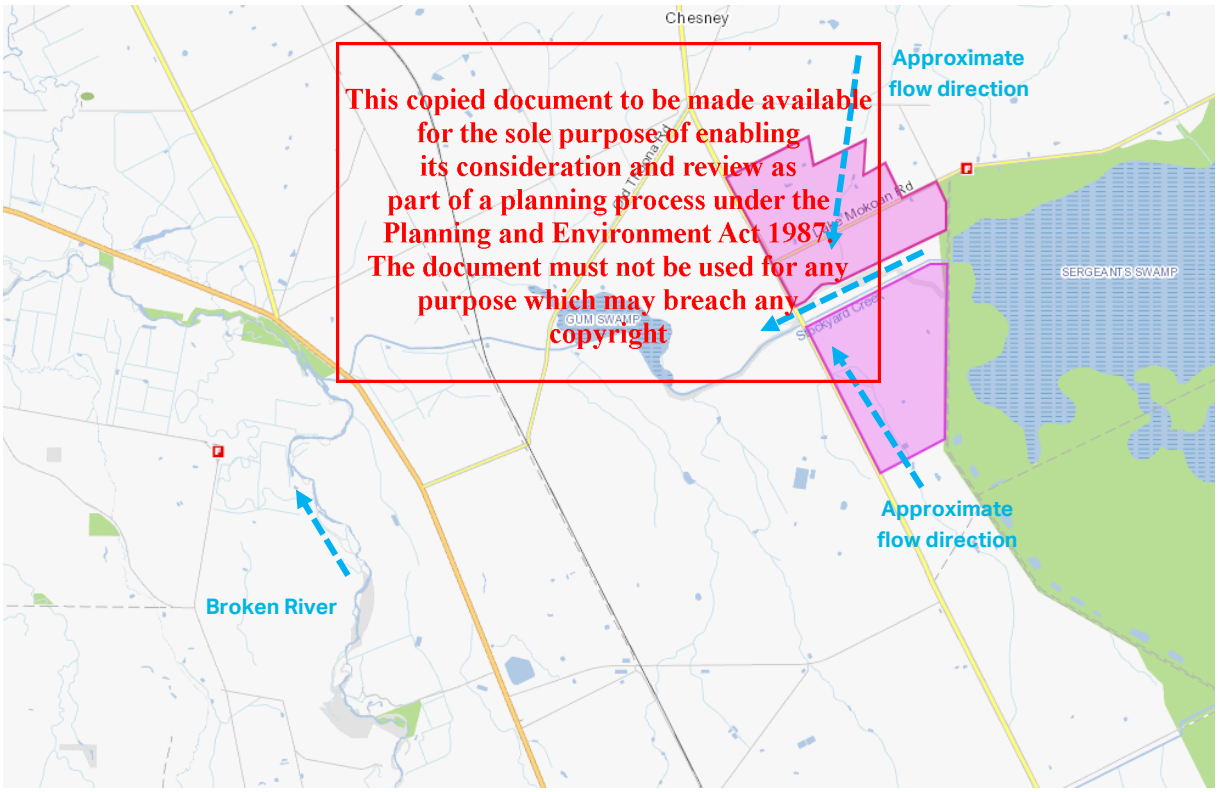


Figure 2 Site context and proximity to Broken Creek, Stockyard Creek and Winton Wetlands Reserve (Source, MapShareVic – DELWP 2019)

2.2 Land Subject to Inundation Overlays and Floodway Overlays

The Department of Environment, Land Water and Planning's (DELWP) 'Mapshare' and 'VicPlan' mapping portals provide information on the extent of Land Subject to Inundation Overlays (LSIO) and Floodway Overlays (FO) across the state.

According to these datasets, the site is not directly affected by any LSIO or FO. The nearest FO is located on the Stockyard Creek that runs between the two proposed sites, just beyond the site boundaries.

It should be noted that there are discrepancies between the data sets presented in each of these map portals. Figure 3 highlights the proximity of the LSIO (pale blue) and FO (light blue) as defined on the VicPlan mapping portal, whereas Figure 4 illustrates the data presented on the Mapshare portal.

Figure 4 shows that DELWP's Mapshare portal does not display the LSIO layer and there are also gaps in the FO layers when compared to those presented in Figure 3.

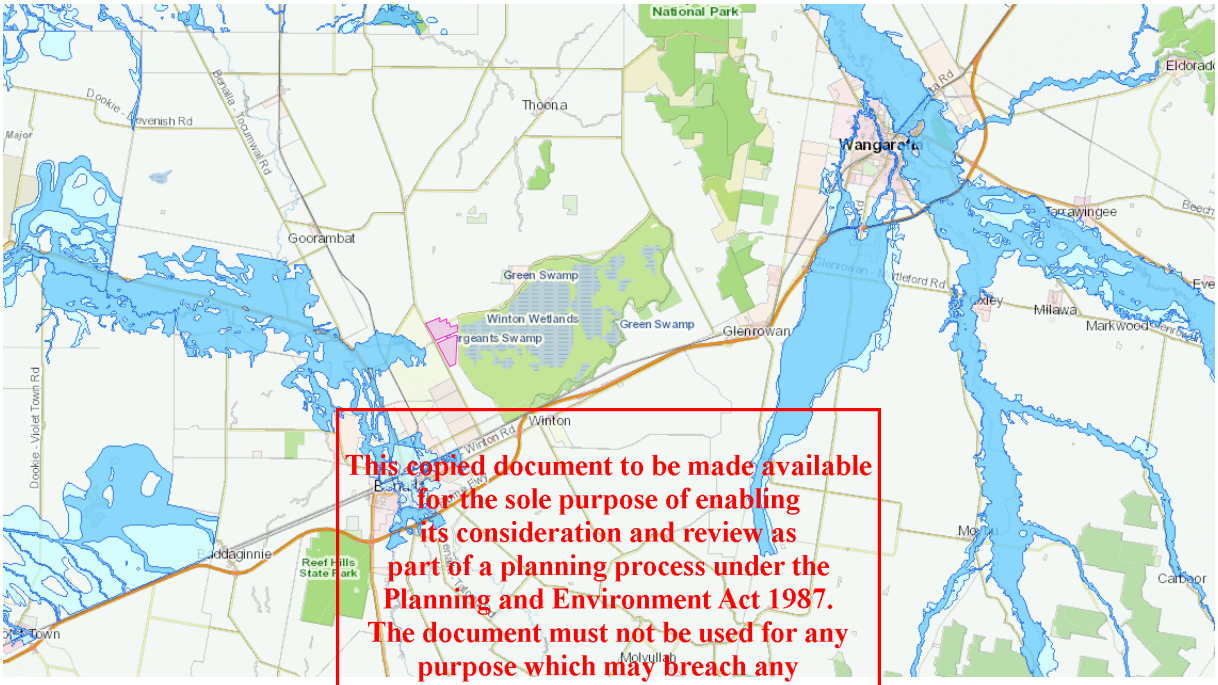


Figure 3 Proximity of Land Subject to Inundation Overlays (LSIO, Light blue), Floodway Overlays (FO, blue) (Source: DELWP VicPlan 2019)

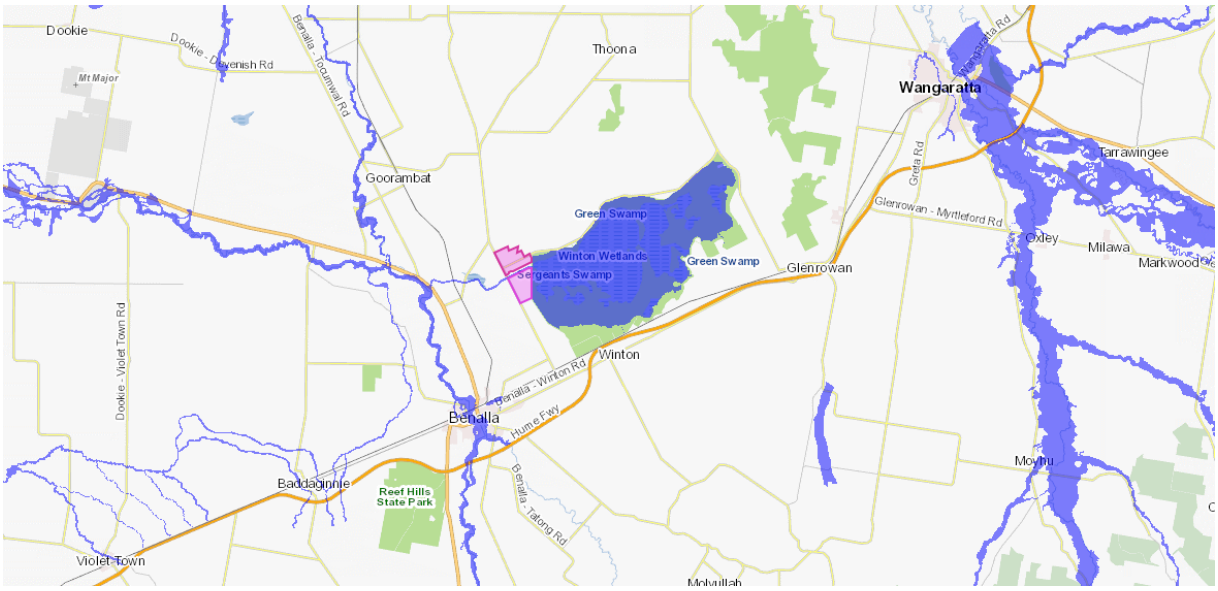


Figure 4 Proximity of Floodway (blue) (Source: DELWP Mapshare 2019)

2.3 Urban Floodway Zone

The Goulbourn Broken Catchment Management Authority (GBCMA) 1% Flood Level Contour Atlas displays an area of Urban Floodway Zone (UFZ) encroaching the southern land parcel, as well as the southern reaches of the northern land parcel (Figure 5 below with full map sheet presented in Appendix A).

An Urban Floodway Zone is categorized to specific land use types that are of low intensity uses, such as agricultural and recreational purposes (Melbourne Water, 2017). Development on an area of UFZ is restricted and requires permission from the catchment management authority. Additionally, an UFZ has limited land use types, neither of which the solar farm will fall under.

However, this UFZ is not referenced on any planning related maps or databases. Additionally, the area of suspected UFZ was not represented on any of the DELWP Mapshare sites.

AECOM sought clarification on the extent of the UFZ from GBCMA on 30 July 2019. The GBCMA responded the same day stating that the Flood Atlas includes water bodies that look like UFZ and that there was no area of UFZ around or over the Winton Wetlands Reserve.

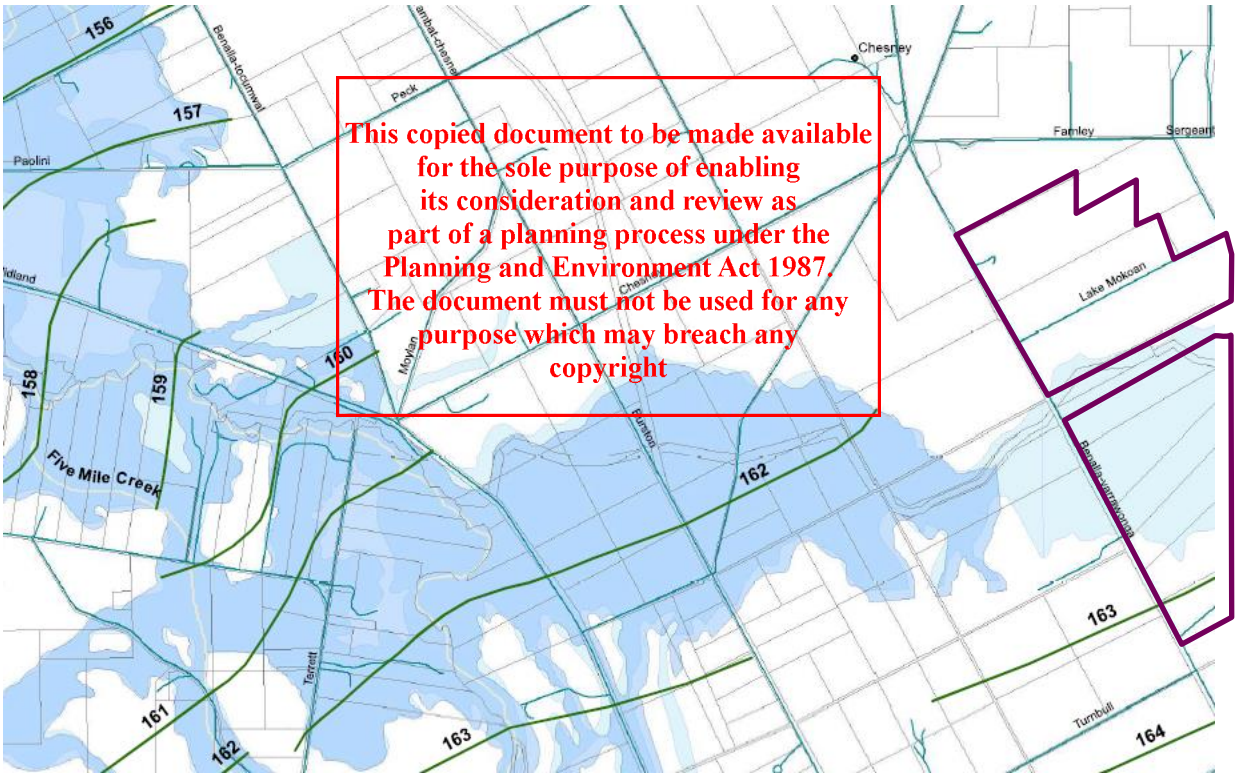


Figure 5 Floodway Overlay zone (blue), Urban Floodway Zones (light blue) and 1%AEP Flood depth contours (Source: GBCMA)

2.4 Wetlands

DELWP's online mapping data identified a wetland, southeast of the study area (wetland ID No. 67909) within the Winton Wetland Natural Features Reserve. The Winton Wetland, formerly recognised as Lake Mokoan, includes a number of additional swamps. These collectively encompass an area of 3,198 hectares and also provide water to the Stockyard Creek.

The area has been described as a largely reformed wetland, containing freshwater marshes and meadows that are periodically inundated. Historically, the Winton Wetlands acted as an offline water storage supply for irrigation, fed by a channel from Broken River. However, the decommissioning of Lake Mokoan potentially decreases the quantity of floodwater during peak flood flows.

2.5 Site features

The spatial and survey data obtained indicates the highest elevation on northern land parcel is approximately 173m AHD, close to the homestead. The lowest elevation for this land parcel is 163m AHD close to the Stockyard Creek embankment. Consequently, all sub-catchment flows within the norther land parcel drain southward towards the Stockyard Creek.

Topographical survey data for the southern land parcel indicates the land is relatively flat with a gentle gradient falling towards the stockyard creek. Elevation on the southern land parcel ranges from approximately 163m AHD in the south east, to 160m AHD along the north western boundary.

The site contains a number of water features including constructed drains, natural channels and farm dams. Aerial imagery indicates that some of these farm dams are interconnected, however, only 2 dams, in the centre of the northern and parcel, appear to be connected by a broken, dry channel. This channel is shown on the site survey data (Figure 6). All other potential flow pathways across the site seem to be less formal with little evidence of channels or eroded lines.

At the southern boundary of the northern land parcel, the aerial imagery shows the land becoming more vegetated and eventually transitioning to marsh-like conditions, close to the Benalla-Yarrawonga Rd bridge. This vegetated channel forms the lowest part of the catchment, adjacent to the Stockyard Creek embankment.

The southern land parcel also has a number of features that will influence the eventual siting and design of the proposed solar farm. These features include a drainage easement that runs through the lower south western portion of the study area, an area of Crown Land in the north east area and an adjacent channel that runs to the Stockyard Creek. This channel drains excess water from the land and discharges it into the Stockyard Creek during wet seasons. It is worth noting this channel has not been identified by the GBCMA or GMW as a designated waterway.

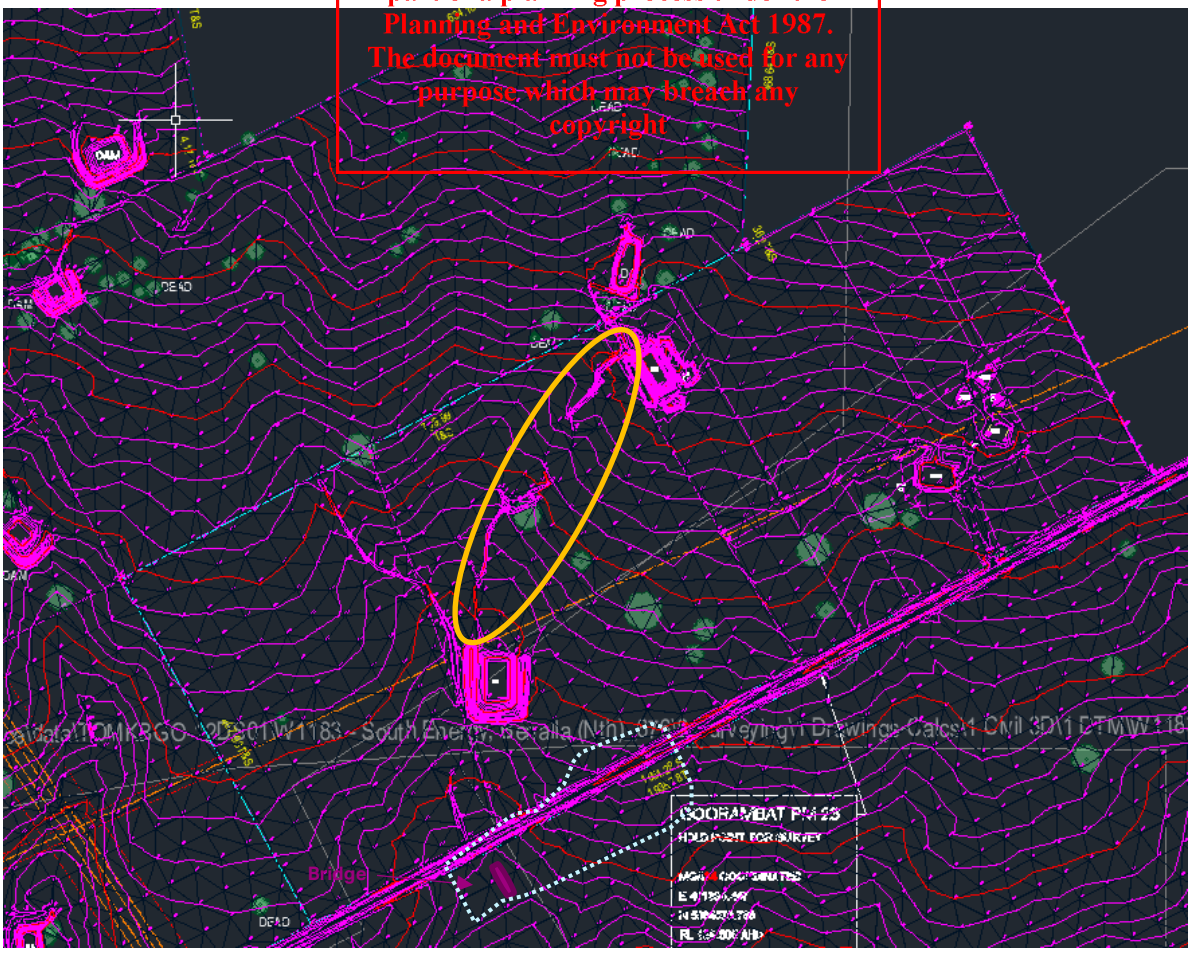


Figure 6 Sample of survey data showing remnants of a channel (circled) between two farm dams (20cm contours)

3.0 Feedback from the Goulburn Broken Catchment Management Authority

The Goulburn Broken Catchment Management Authority (GBCMA) is the region's peak natural resource management body and is responsible for the implementation of the Regional Catchment Management Strategy. In this role, the GBCMA guides development to ensure the region's land and water resources are protected for the benefit of the region.

AECOM submitted two Floodplain Advice Requests to the GBCMA on 07 February 2019 for the West Mokoan Solar Farm and the Kennedys Creek Solar Farm. The Kennedys Creek Solar Farm is also a South Energy Project located on nearby land to the south of the West Mokoan Solar Farm (Planning Application no. PA1900684 – Benalla Planning Scheme). The objective of these enquiries was to seek their in-principle support for the projects and understand the nature of any permit conditions they may place on the development.

GBCMA responded on 27th February 2019 outlining guidance for the West Mokoan Solar Farm and on 28th February 2019 outlining guidance for the Kennedys Creek Solar Farm. The two letters outlined that the GBCMA would not object to the proposed solar farms, subject to conditions outlined at Section 3.2 below (the full responses are provided in Appendix B of this report).

Despite the proximity of the Kennedys Creek Solar Farm and the West Mokoan Solar Farm, the two letters set slightly different freeboard requirements for finished floor levels of inverters, transformer blocks and buildings. The letter dated 27th February 2019 required 450 mm above general surrounding ground level for inverters and transformer blocks, whereas the letter dated 28th February 2019 required 300 mm above the applicable 1% AEP flood level.

GBCMA provided clarification via the email dated 27 August 2020, which identified that where flood level information is available, then 300 mm freeboard above 1% AEP is applicable. In the absence of flood information, 450 mm above general surrounding ground level is recommended by GBCMA (refer to Appendix B for GBCMA correspondence).

For the West Mokoan sites, detailed flood level information is available in the adjacent Stockyard Creek gauging station. This provided the justification to use 300 mm freeboard above the 1% AEP flood level for the West Mokoan Solar Farm.

It is worth noting the southern land parcel was added to the proposed project area after this floodplain advice application was made. However, the GMW Waterway Determination assessment does consider this additional land parcel and is presented in Section 4.0 of this report.

3.1 Goulburn Broken CMA Observations

At the time of the floodplain advice application response, the GBCMA stated there was no flood or detailed ground level information for the site, however they drew attention to the nearest 1% AEP flood contour, beyond the western boundary of the site. These flood contours were established from limited 1993 flood levels.

The GBCMA also identified a designated waterway crossing the site from the north towards the Stockyard Creek.

3.2 Goulburn Broken CMA Conditions

The response received on 27 February 2019 from the GBCMA indicated that they would not object to the proposed solar farm, subject to the following conditions:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 7.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 450 millimetres above general surrounding ground level.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).

4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

The response received on 28 February 2019 from the GBCMA indicated that they would not object to the proposed solar farm, subject to the following conditions:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 7.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level as shown in Figure 1.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

3.3 Further clarification and site visit

The designated waterways map provided with the GBCMA response showed some discrepancies with the aerial imagery and site survey data. Furthermore, several waterways across the site were poorly defined with little evidence of a drainage channel or eroded line.

AECOM sought further clarification on determining setbacks for these poorly defined designated waterways. The GBCMA provided a response stating setbacks of 15 m from the centreline of a waterway would be acceptable (Appendix B).

A joint site meeting was organised with the GBCMA and Goulburn Murray Water (GMW) on 02/07/19 to discuss these waterways and determine the next steps.

The site meeting provided an opportunity to discuss setback sizes for some of the waterways across the site. It was confirmed during the discussion that setbacks can vary for different waterways and, where it can be demonstrated there are no impacts, setbacks of 5m wide may be accepted.

The site meeting also confirmed that some of the designated waterways were not well defined. It was recommended that a waterway determination assessment should be carried out by GMW to ascertain the purpose, status and delineate these waterways.

Figure 7 Location of designated waterways across the site, shown purple (Source: GBCMA Floodplain Advice Response)

4.0 Goulburn Murray Water, Waterway Determination

Goulburn Murray Water (GMW), a statutory corporation, is Australia's largest rural water corporation. It manages approximately 70 per cent of Victoria's stored water resources, 50 per cent of Victoria's underground water supplies and Australia's largest irrigation delivery network.

AECOM submitted a Waterway Determination application to GMW on 15 July 2019. GMW subsequently carried out the waterway determination assessment and provided a response on 30 July 2019.

4.1 Waterway determination assessment findings

The waterway determination for the West Mokoan site identified one designated waterway within the northern site area and one within the southern area.

The waterway across the northern site drains a catchment of approximately 62 hectares. It is described by GMW as a waterway with developed and undeveloped drainage lines as it passes through the site. The waterway determination assessment also indicated the lowest section of this waterway flows in a south easterly direction. Figure 8 illustrates the location of the waterway across the northern site area.

The waterway across the southern site area is described by GMW as a developed drainage channel. This channel serves a catchment of approximately 72 hectares and links multiple land parcels as it flows north towards the Stockyard Creek.

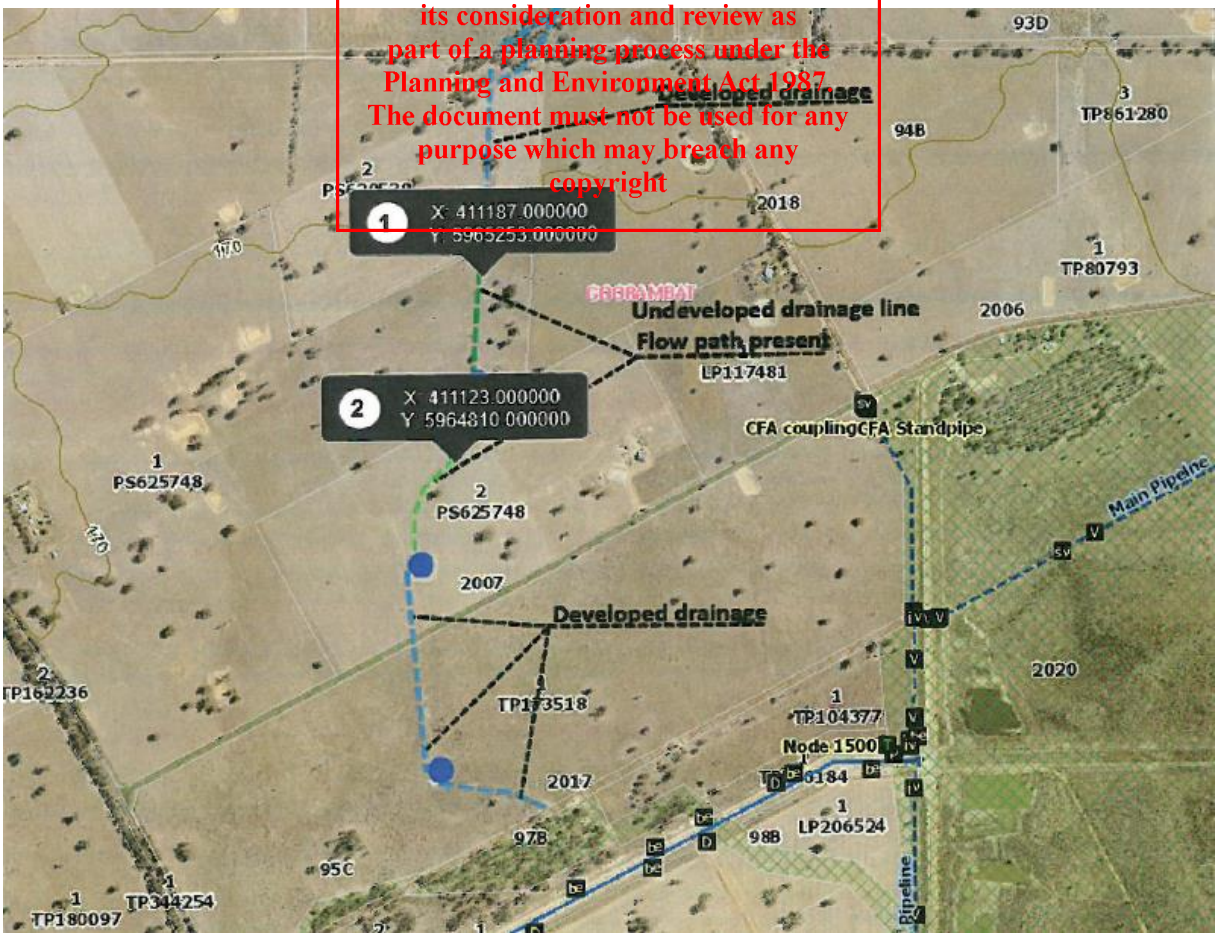


Figure 8 The GMW confirmed waterway on the northern area of the West Mokoan site (shown blue and green).

Figure 9 The GMW confirmed waterway across the southern area of the West Mokoan site (shown blue).

The waterway determination inspection report concluded that additional drainage lines, depressions, gullies may be present, requiring further protection development by means of setbacks. The full response from GMW is provided in Appendix C of this report.

5.0 Managing flood risks

The construction activities and some of the proposed infrastructure may change the local drainage and flood characteristics. The following sections highlight some of these aspects for further consideration including measures on how these impacts will be managed.

5.1 Solar Arrays

Runoff from the proposed solar arrays will be intercepted by grassed, pervious surfaces and will not significantly change the fraction of imperviousness for the total area of the site. Nevertheless, the solar arrays may change local flow characteristics if they are sited in active flood pathways.

The solar panels in the site area located north of the Stockyard Creek will be set back at least 15m from the centreline of the designated waterway that traverses the centre of the site. This is in line with the guidance provided by the GBCMA in an email (dated 12 June 2019).

The designated waterway that flows through the south western corner of the southern site is contained within a 5m wide drainage easement. The proposed solar arrays in this area will be set back at least 5m from the edges of the easement. This will provide access for future waterway maintenance activities, on both sides of the channel.

Additionally, the solar panels will be elevated such that they are least 300mm above the predicted 1% AEP flood level when stowed in the horizontal position.

5.2 Internal Access Roads

The concept plan for the northern site indicates a perimeter access road with multiple 'lateral' connecting roads that run south west to north east through the site. These access roads will be designed on grade to allow surface water flows to continue across the site during significant flood events. Additionally, roads that cross well defined waterways (e.g. waterways with channels) may require bridges or culverts to allow uninterrupted flows of floodwater.

Local drainage may be required to convey flows captured in swale drains associated with the access tracks and at low points. All existing access tracks and local roads will be maintained at the current elevation.

A works on waterways permit will be sought where the access roads cross the designated waterway. All other waterway crossings will be designed in accordance with the guidance of the relevant authorities.

5.3 Substation Area

The finished floor levels of the substation area will be constructed 300mm above the 1% AEP flood level as conditioned by the GBCMA.

5.4 Inverter Blocks

The inverter blocks will be distributed throughout the site, adjacent to the access tracks. Recognising the requirements of the GBCMA, the base for these structures will be set at least 300mm above the predicted 1% AEP flood event.

5.5 New impervious areas (e.g. Concrete, roofing and transformer cabinets)

Impervious areas of the site could concentrate runoff or displace surface water storage. However, the impacts of these structures are expected to be minor with runoff flowing onto impervious areas where infiltration will occur. For these areas, design considerations will include level spreaders to convert channelised flow back to sheet flow or discharge into infiltration drainage channels or soak pits.

5.6 Site Fencing

Poorly designed fencing can collect debris and exacerbate local flood impacts. Site fencing will be designed so that it does not obstruct flood flows across the land. This likely to include farm type fencing that features a large open mesh construction or vertical farm style fencing as conditioned by the GBCMA.

5.7 Land Remediation

Changes in soil characteristics occur primarily due to construction activities through excavation, compaction, erosion, leaching and contamination. The removal of vegetation, due to excavation activities and disturbance will also change the infiltration capacity of the soil, leading to increase runoff.

To manage these impacts, disturbed ground will be quickly stabilised and reinstated. Similarly, any land drains or ditches will be reinstated or replaced to maintain existing drainage characteristics.

Reestablishment of surface treatments are critical to erosion and sediment control. consideration of rock lining drainage channels where reestablishment cannot be achieved should be made.

5.8 Flood Resilience

Information from the GBCMA and anecdotal evidence from the landowner suggest the land may be flood prone with extended periods of waterlogging. The proposed infrastructure will be designed to shed water as well as withstand regular and extended periods of inundation.

5.9 Site Grading

Upstream and downstream boundaries of the site will be suitably graded with the site surfaces to retain the existing flood flow pathways across the site.

5.10 Localised Flows

It is not anticipated that runoff from the solar arrays will cause erosion. However, local drainage controls will be implemented where concentrated flows have been identified.

5.11 Understanding Flood Risk

The lower catchment position and close proximity of the Stockyard Creek indicate the potential for flooding across the site. Additionally, there are a number of waterways and water management structures on site that have not been identified as a designated waterway by the GBCMA or GMW.

Detailed hydrologic and hydraulic investigations will be undertaken as part of detailed design to determine the extent, depth and flow hazards of surface water within the site.

6.0 Managing surface water quality

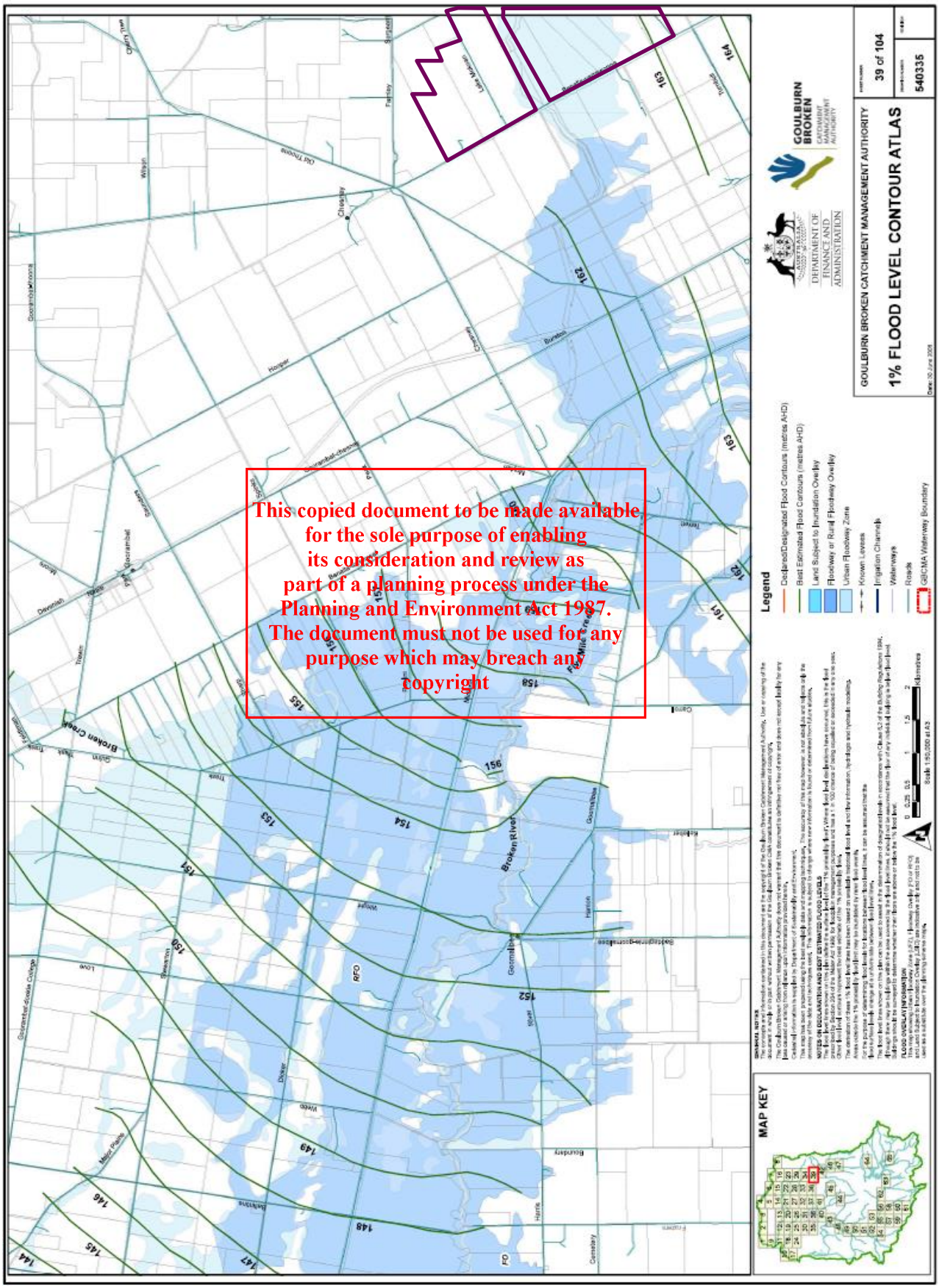
Conversion from farming activities to a solar farm may ultimately reduce the risk of surface water contamination following construction, once the site is operational and the ground conditions have been re-established with appropriate drainage. However, the project may present a risk to surface water quality for the Stockyard Creek and Broken River during the construction phase.

The following measures will be included in the Environmental Management Plan and Construction Environmental Management Plan.

- Construction activities will be effectively managed by best practice pollution prevention strategies in accordance with EPA publications *480 Environmental Guidelines for Major Construction Sites and 275, Construction Techniques for Sediment Pollution Control and International Erosion and Sediment Control Association (IECA) Australasia guidelines.*
- Construction activities will also adhere to a site-specific erosion and sediment control plan.
- Works on and around waterways will only occur when they are dry.
- Areas of disturbed ground will be quickly reinstated following completion. Optimum surface treatments will be selected to fast track stabilisation of surfaces and prevention of erosion during establishment.
- Sediment control fences will be employed downstream of work areas.
- Sedimentation ponds will be constructed to collect silty runoff (the use of flocculants will also be considered where appropriate).
- Diversion bunds will be used to direct water to sedimentation ponds for treatment. The height and alignment of bunds will be considered so as not to increase the risk of flooding.
- Works with a high risk of causing erosion will be scheduled during the driest periods.
- Soils will be quickly remediated with topsoil (where compacted or leached), seeded and over-seeded during the correct season.
- Mulches and soil binders (e.g. hydromulch) will be considered for newly exposed embankments, slopes and longer-term stockpiles.
- Any man-made impoundment or conveyance structures (e.g. irrigation storage ponds and channels) will be assessed for their necessity, environmental impact and ongoing safety.
- Surface treatments for drainage infrastructure will be designed to resist scour and erosion. drainage will be designed to limit flow velocities to prevent scour.
- Discharge of channelised flow shall be via the use of level spreaders or direct outfall into Stockyard Creek with suitable erosion protection.

Appendix A

1% AEP Flood Map



Appendix B

GBCMA Response

Our Ref: GBCMA-F-2019-00089
Document No: 1

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Date: 27 February 2019

Mr Tony Barrett
AECOM Australia Pty Ltd
727 Collins Street
Melbourne VIC 3008 tony.barrett@aecom.com

Dear Mr Barrett

Floodplain Management Advice for
Proposed Solar Farm
892 Benalla-Yarrawonga Road Goorambat

Thank you for your application dated 7 February 2019, received by the Goulburn Broken CMA on 7 February 2019, regarding the above matter.

The Goulburn Broken CMA's assessment of the above information has determined that the proposed development location is covered by the Farming Zone, Road Zone - Category 1 in the Benalla Planning Scheme.

The Goulburn Broken CMA does not have any flood or detailed ground level information for the site. However, information derived from the 1993 flood (which is representative of the 1% AEP flood adjacent to the site is shown in **Figure 1**. This figure also depict designated waterways that traverses through the site, which should remain free from obstruction.

In the light of the above information, the Goulburn Broken CMA would not object to the proposed solar farm, **subject to the following conditions**:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 1.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 450 millimetres above general surrounding ground level.
3. The corridors along the waterway shown in Figure 1 shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses the waterway shown in Figure 1 the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

Note, where access roads cross the waterway shown in Figure 1 a works on waterways permit will be required from the Goulburn Broken CMA.

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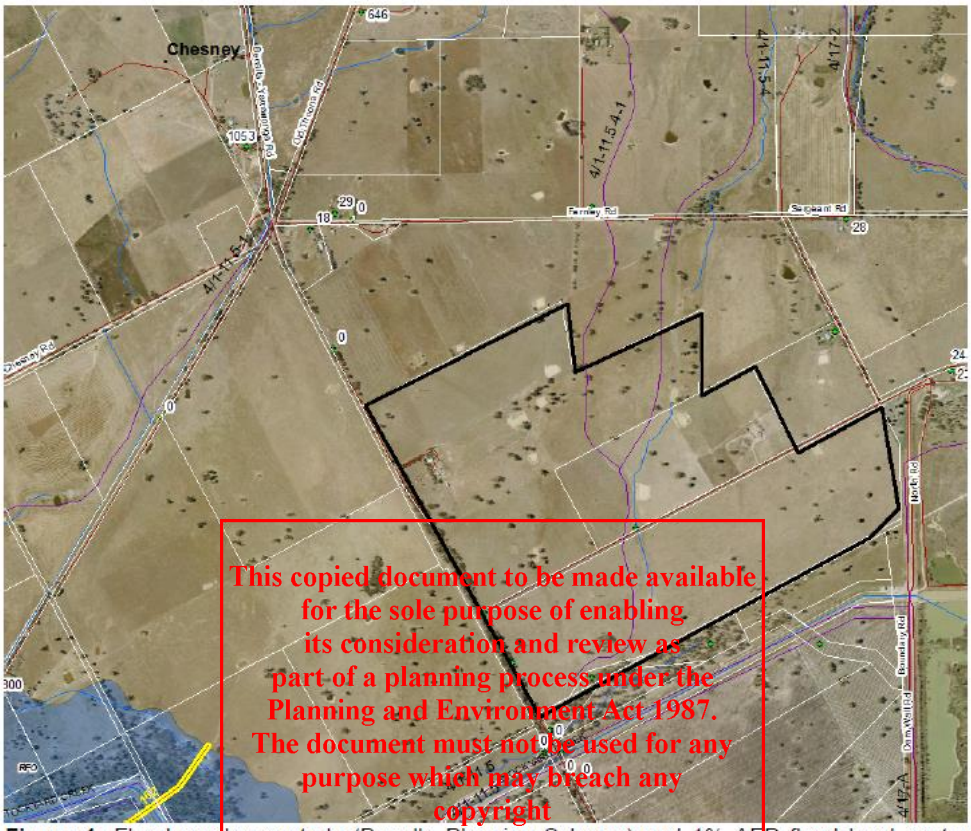

Figure 1: Flood overlay controls (Benalla Planning Scheme) and 1% AEP flood level contour adjacent to the site.

Please Note:

- This document contains floodplain management advice only. It does not constitute approval from any other statutory body. It is your responsibility to obtain any other required approvals.
- The 100-year ARI flood is not the maximum possible flood. There is always a possibility that a flood larger in height and extent, than the 100-year ARI flood, may occur in the future.

If you have any queries, please contact me on **(03) 5822 7700**. To assist in handling any enquiries please quote **GBCMA-F-2019-00089** in your correspondence. Please note that all electronic correspondence should be directed to planning@gbcma.vic.gov.au.

Yours sincerely

Guy Tierney
Statutory Planning and Floodplain Manager

Information contained in this correspondence is subject to the definitions and disclaimers below.

Definitions and Disclaimers

1. The area referred to in this letter as the 'proposed development location' is the land parcel(s) that, according to the Authority's assessment, represent(s) the location identified by the applicant. The identification of the 'proposed development location' on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or local government authority.
2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.
3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).
4. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
5. **AHD** as Australian Height Datum - is the adopted national height datum that generally relates to height above mean sea level. Elevation is in metres.
6. No warranty is made as to the accuracy or liability of any studies, estimates, calculations, opinions, conclusions, recommendations (which may change without notice) or other information contained in this letter and, to the maximum extent permitted by law, the Authority disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any recipient or other person through relying on anything contained in or omitted from this letter.
7. This letter has been prepared for a proposed **Solar Farm** and is for the use only of the party to whom it is addressed and no responsibility is accepted to any third party for the whole or any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority's written approval of the form and context in which it will appear.
8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
9. ***The responsible authority may use this information within 90 days of this letter.***

Our Ref: GBCMA-F-2019-00090
Document No: 1

Date: 28 February 2019

Mr Tony Barrett
AECOM Australia Pty Ltd
727 Collins Street
Melbourne VIC 3008 tony.barrett@aecom.com

Dear Mr Barrett

Floodplain Management Advice for
Proposed Solar Farm
Lot 4, Plan PS318659
226 Murray Road Benalla Vic 3672

Thank you for your application dated 07 February 2019, received by the Goulburn Broken CMA on 07 February 2019, regarding the above matter.

The Goulburn Broken CMA's assessment of the above information has determined that the proposed development location is covered by the Industrial 1 Zone, Industrial 2 Zone, Road Zone - Category 1, Road Zone - Category 2 in the Benalla Planning Scheme.

The Authority's best estimate of the 1% AEP flood levels for the location described above varies from 165.5 and 168.5 metres AHD (see Figure 1), which was established from limited 1993 flood levels. The Authority has no detailed ground level information to determine depths of flooding over the site.

Figure 1 also shows a number of designated waterways that traverse through the site. In this regard, the waterways should remain free from obstruction with vegetated corridors.

In the light of the above information, the Goulburn Broken CMA would not object to the proposed solar farm, **subject to the following conditions**:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 1.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level as shown in Figure 1.

www.gbcma.vic.gov.au

SHEPPARTON
Head Office
168 Welsford Street
PO Box 1752
Shepparton VIC 3632
Tel: (03) 5822 7700
Fax: (03) 5831 6254

BENALLA
89 Sydney Road
PO Box 124
Benalla VIC 3672
Tel: (03) 5822 7700

YEA
5/10 High Street
Yea VIC 3717
Tel: (03) 5797 4400

3. The corridors along all waterways, as shown in Figure 1, shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses waterways, as shown in Figure 1, the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

Figure 1: Showing estimated 1% AEP flood contours and designated waterways.

Note, where access roads cross the waterway shown in Figure 1 a works on waterways permit will be required from the Goulburn Broken CMA.

Please Note:

- This document contains floodplain management advice only. It does not constitute approval from any other statutory body. It is your responsibility to obtain any other required approvals.
- The 100-year ARI flood is not the maximum possible flood. There is always a possibility that a flood larger in height and extent, than the 100-year ARI flood, may occur in the future.

If you have any queries, please contact me on **(03) 5822 7700**. To assist in handling any enquiries please quote **GBCMA-F-2019-00090** in your correspondence. Please note that all electronic correspondence should be directed to planning@gbcma.vic.gov.au.

Yours sincerely

Guy Tierney
Statutory Planning and Floodplain Manager

Information contained in this correspondence is subject to the definitions and disclaimers below.

Definitions and Disclaimers

1. The area referred to in this letter as the 'proposed development location' is the land parcel(s) that, according to the Authority's assessment, represent(s) the location identified by the applicant. The identification of the 'proposed development location' on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or local government authority.
2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.
3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).
4. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
5. **AHD** as Australian Height Datum - is the adopted national height datum that generally relates to height above mean sea level. Elevation is in metres.
6. No warranty is made as to the accuracy or liability of any studies, estimates, calculations, opinions, conclusions, recommendations (which may change without notice) or other information contained in this letter and, to the maximum extent permitted by law, the Authority disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any recipient or other person through relying on anything contained in or omitted from this letter.
7. This letter has been prepared for a proposed Solar Farm and is for the use only of the party to whom it is addressed and no responsibility is accepted to any third party for the whole or any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority's written approval of the form and context in which it will appear.
8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
9. ***The responsible authority may use this information within 90 days of this letter.***

Taggert, Natalie

From: Barrett, Tony
Sent: Thursday, 27 August 2020 9:30 AM
To: Guy Tierney
Cc: Kasraie, Leila; Butler, Kristina
Subject: RE: Use of 300mm Freeboard for Inverters and Transformer Blocks

Thanks Guy,

That's correct. Our modelling and flood risk assessments are using the gauge data from the Stockyard Creek. This gauge provides a level for the major flooding in 1993 which was considered equivalent to the 1% AEP event for this catchment.

Thanks again,
Tony

Tony Barrett
Principal Consultant Water
D +61 3 9653 8073
Tony.Barrett@aecom.com

AECOM
Collins Square, Level 10, Tower Two 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

From: Guy Tierney <guyt@gbcma.vic.gov.au>
Sent: Wednesday, 26 August 2020 9:15 PM
To: Barrett, Tony <Tony.Barrett@aecom.com>
Cc: Kasraie, Leila <leila.kasraie@aecom.com>; Butler, Kristina <Kristina.Butler@aecom.com>
Subject: [EXTERNAL] RE: Use of 300mm Freeboard for Inverters and Transformer Blocks

Dear Tony

The logic is that if you have available flood level information then the freeboard is the usual 300mm above the applicable flood. If you have such information then use it.

In the absence of flood information and allowing for those localised severe thunderstorm episodes due the climate change the allow 450mm above the general surround ground level. This only allows for 150mm of overland localised flooding with 300mm freeboard.

Sincerely

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Guy Tierney
Statutory Planning and
Floodplain Manager
Floodplain advice application forms; Works on waterways application forms
P | 03 5822 7700 M | 0408 359 991
E | guyt@gbcma.vic.gov.au W | www.gbcma.vic.gov.au
Workdays: Monday to Friday

I acknowledge the Traditional Owners of the land on which we work.
I pay my respects to their Elders; past, present and emerging and our Indigenous staff.

From: Barrett, Tony <Tony.Barrett@aecom.com>
Sent: Wednesday, 26 August 2020 4:10 PM
To: Guy Tierney <guyt@gbcma.vic.gov.au>
Cc: Kasraie, Leila <leila.kasraie@aecom.com>; Butler, Kristina <Kristina.Butler@aecom.com>
Subject: Use of 300mm Freeboard for Inverters and Transformer Blocks

Hi Guy,

Great to catch up again…. T-Minus 2 weeks and hopefully things will be a 'little' more normal.

As discussed, the two floodplain advice application responses we received in February 2019 (attached) had slightly different recommendations for the elevation of transformers and inverters above the predicted 1% AEP flood level (one requiring 300mm and one for 450mm).

Based on our conversation, it's my understanding that you would accept the use of a 300mm freeboard requirement for these two neighbouring sites.

However, please let me know in the meantime if you require any further information to satisfy this decision.

Many thanks,
Tony

Tony Barrett
Principal Consultant Water
D +61 3 9653 8073
Tony.Barrett@aecom.com

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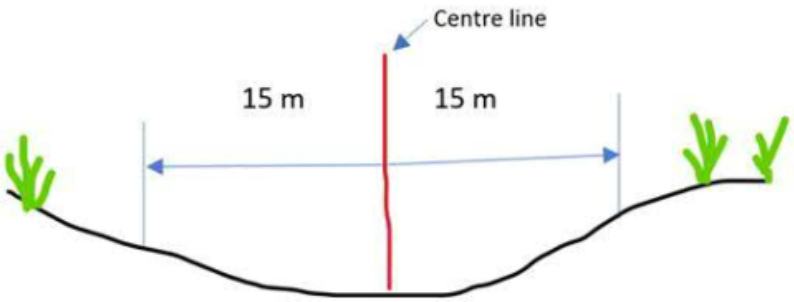
2

Barrett, Tony

From: Russel Haque <russelh@gbcma.vic.gov.au>
Sent: Wednesday, 12 June 2019 2:56 PM
To: Barrett, Tony
Cc: Guy Tierney
Subject: GBCMA-F-2019-00089 & GBCMA-F-2019-00090

Hi Tony,
Referring to the subject mentioned applications, we have reviewed our responses and setback distances from the waterways. Please see the figure
below:



A 15 metres setback distance is required from the centreline of the waterways i.e. 30 metres corridors for the waterways. This corridor needs to be maintained for the waterways throughout the project areas for both solar farm projects.

Please let me know if you need to know anything further details.

Sincerely

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Russel Haque
Floodplain and River Health Projects Officer

P | 03 5822 7724 M | 0407 199 954
E | russelh@gbcma.vic.gov.au W | www.gbcma.vic.gov.au
My work days are Monday to Fridays, 8:30-5:00pm

1

Appendix C

GMW Waterway Determination Response

GOULBURN-MURRAY WATER

Our Ref: #A3638804
Your Ref: PN8195460

30 July 2019

Tony Barrett
AECOM - c/o Link Development Pty Ltd
Collins Square, Level 10, Tower 2
727 Collins St.
MELBOURNE VIC 3008

Lake Mokoan Solar Farm Proposal

Dear Tony,

I refer to a recent inspection at the properties listed below by Goulburn-Murray Water Diversion Inspector Ben Ives.

Lot 1, Plan of Subdivision 625748, Parish of Goorambat
Lot 1, Title Plan 173518, Parish of Goorambat
Lot 2, Plan of Subdivision 625748, Parish of Goorambat

The purpose of this inspection was to carry out a "Waterway Determination" on the above described properties to identify any existing waterways.

This inspection identified a waterway commencing at the point identified by co-ordinates Zone 55, Eastings: 411559, Northings: 5966301 on lot 1 TP 819039, Parish of Goorambat.

A "Waterway Determination" is made by matching criteria used by Goulburn-Murray Water to determine if there is a waterway/watercourse at the site, as defined under Section 3 of the Water Act 1989.

As a result of the inspection, our findings show there is a waterway at the specific site inspected on this property at the above coordinates. It was identified during this inspection that the waterway also traverses the properties described above that are subject to the proposed development. In accordance with your advice, the purpose of the Waterway Determination is in relation to a proposed Planning Permit application.

There may be additional drainage lines, depressions or gullies that may require protection from development by means of setbacks. A map showing the location of the significant drainage lines, depressions or gullies is attached for your information.

PO Box 165 Tatura Victoria 3616 Australia | Email reception@gmwater.com.au | Phone 1800 013 357 | Website www.gmwater.com.au

Additionally, please be advised that the application has not been assessed for potential impacts on surface or groundwater quality and this letter is not prior written approval of the development proceeding.

GMW's interest is with the protection of surface water and groundwater and an assurance that proposed developments will not impact detrimentally on the flow and quality of surface water and groundwater.

Any proposed works planned on the waterway will require approval in the form of a Works Licence from Goulburn-Murray Water if the works relate to the 'take and use' of water.
Approval from the Goulburn Broken Catchment Management Authority is required for any other works.

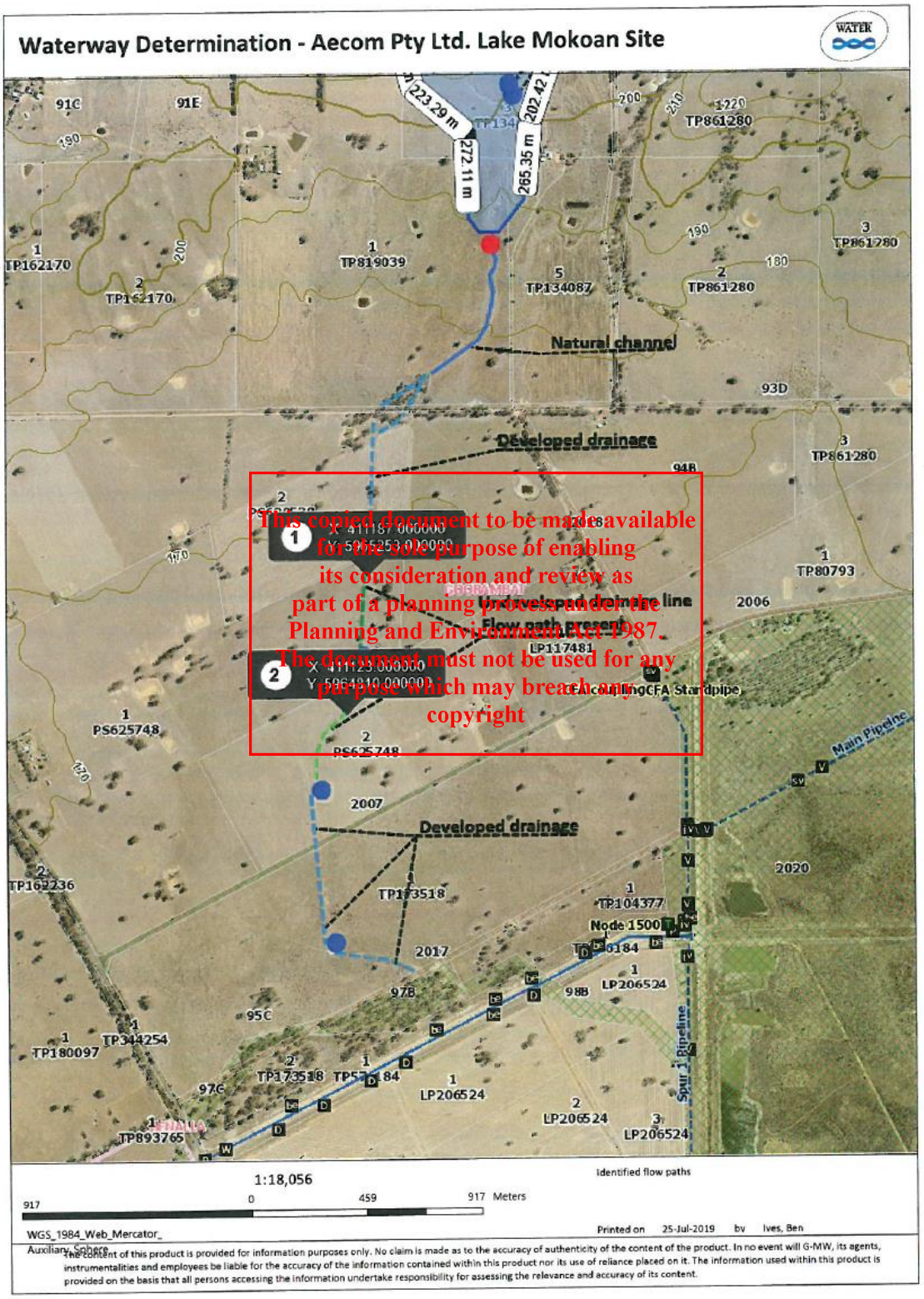
You are advised that you may require a planning permit from your Local Shire Council for the building and subsequent works and it is your responsibility to obtain permits as necessary.

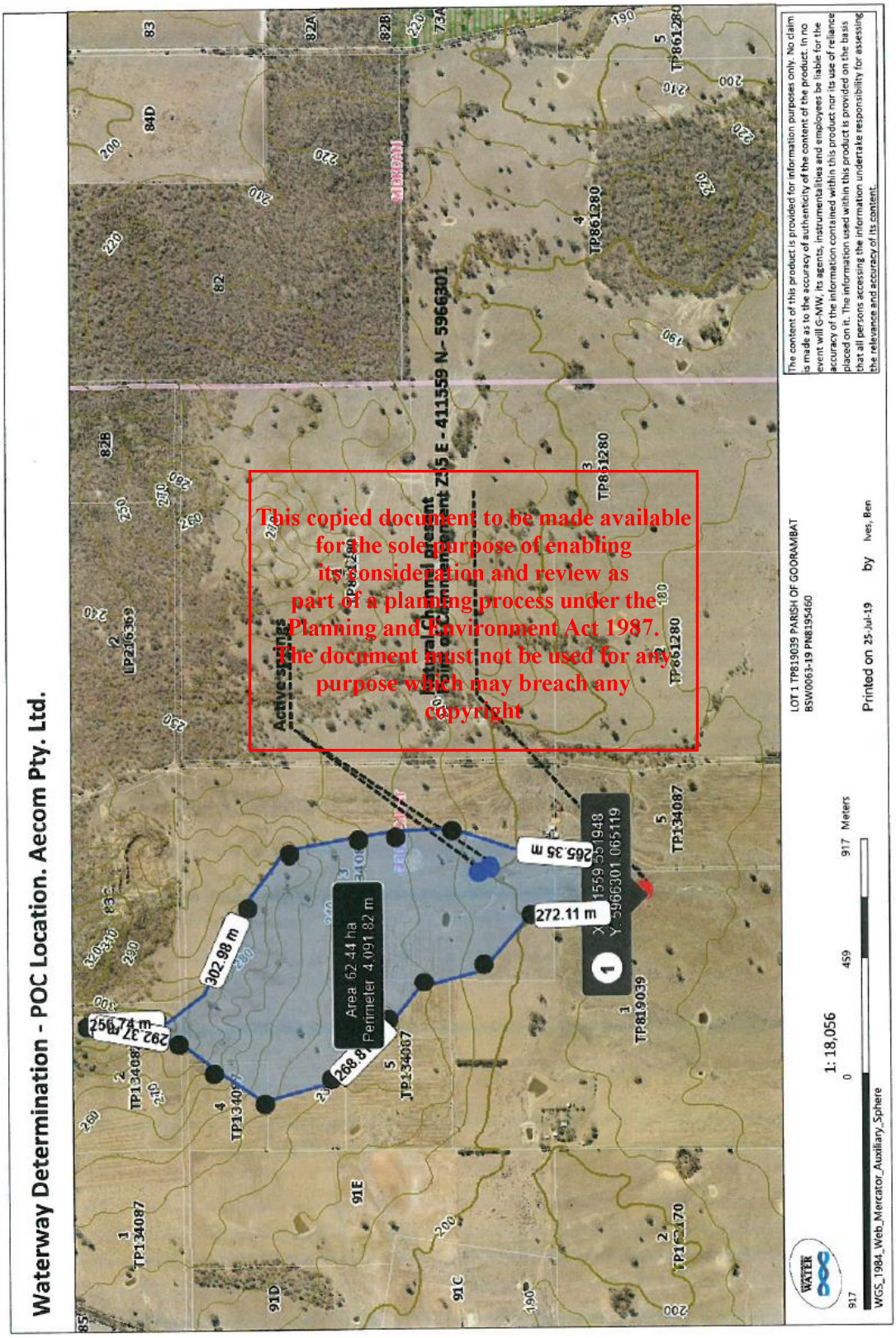
Should you require any further information on this inspection please do not hesitate to contact Diversion Inspector Ben Ives at the Shepparton office of Goulburn-Murray Water on (03) 58 227 958.

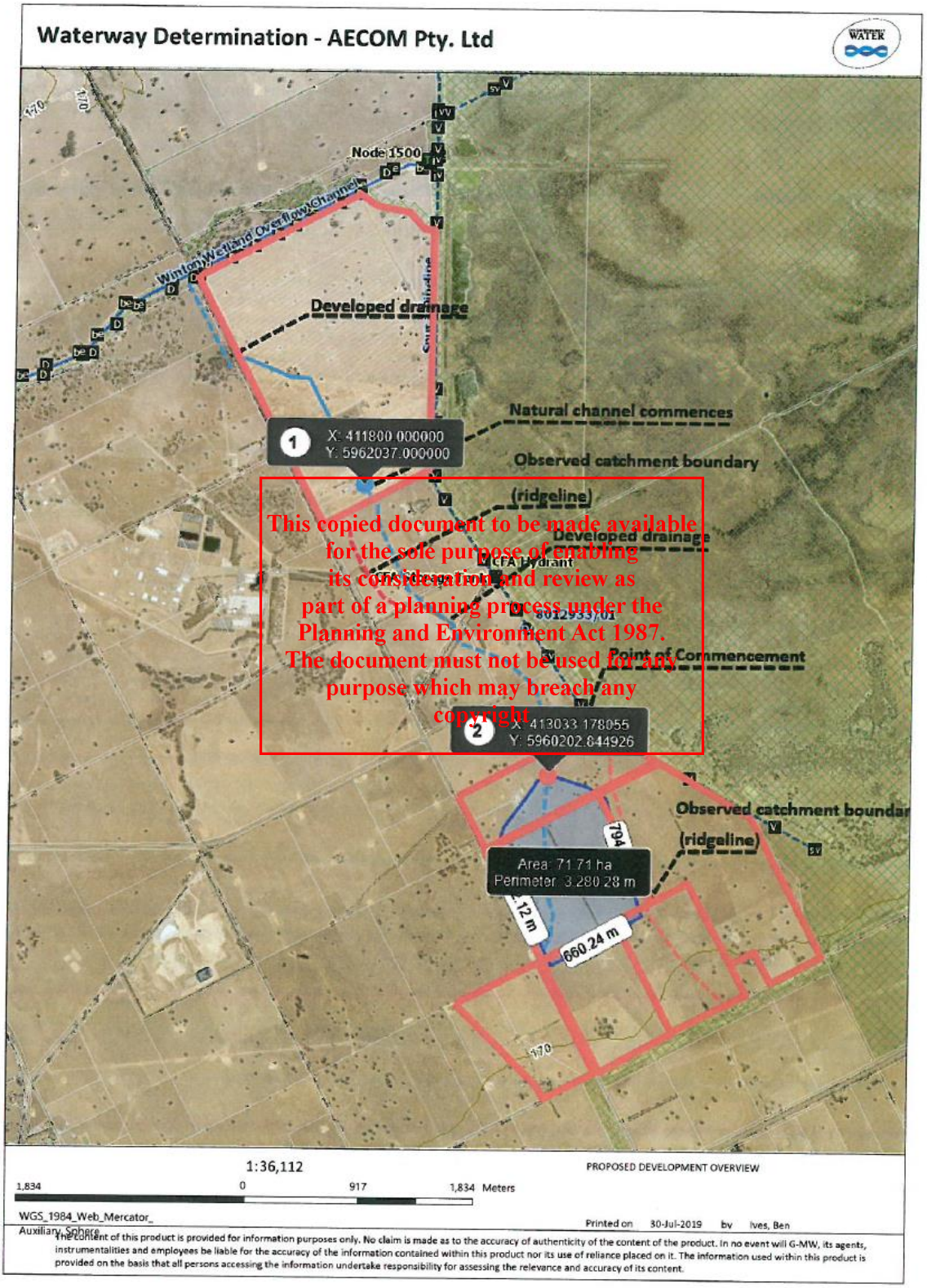
Yours sincerely

Cathy Wood
CUSTOMER SERVICE MANAGER
DIVERSIONS CENTRAL

cc Goulburn Broken Catchment Managent Authority
cc Benalla Rural City council
cc Ranine McKenzie – GMW Statutory Planning Unit







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Prepared for
433 Link Development Pty Ltd
ABN: 30 626 633 369

Kennedys Creek Solar Farm

Surface Water Assessment

24-Feb-2023
Benalla South Solar Farm

Kennedys Creek Solar Farm

Surface Water Assessment

Client: 433 Link Development Pty Ltd

ABN: 30 626 633 369

Prepared by

AECOM Australia Pty Ltd
Wurundjeri and Bunurong Country, Tower 2, Level 10, 727 Collins Street, Melbourne VIC 3008, Australia
T +61 3 8670 6800 www.aecom.com
ABN 20 093 846 925

06 December 2022

Job No.: 60585632

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Table of Contents

1.0 Introduction

1.1 Site Context

In September 2019, AECOM Australia Pty Ltd prepared a planning permit application on behalf of the Applicant, 433 Link Development Pty Ltd (then owned by South Energy) for the construction of a solar farm facility on land adjacent to Murray Road, Nelson Road, and Benalla-Yarrawonga Road, Benalla, Victoria. The site addresses were:

- 226 Murray Road, Benalla
- 51 Nelson Road, Benalla
- 67 Nelson Road, Benalla
- 125 Nelson Road, Benalla
- 284 Benalla-Yarrawonga Road, Benalla.

On 22 September 2021, ownership of the Project Applicant (433 Link Development Pty Ltd) was transferred from South Energy to Lightsource bp. Previous iterations of this report refer to South Energy, however all new information within this report refers to Lightsource bp to reflect current ownership of the Project Application.

Lightsource bp subsequently proposed changes to the concept designs for the Project, therefore this Surface Water Assessment has been updated to support an application under Section 72 of the *Planning and Environment Act 1987* (P&E Act) to amend the planning permit for the Project (the amendment). The amendment seeks to:

- Rearrange the layout of Kennedys Creek Solar Farm to:
  - Relocate the substation to the north-east of the site and connection to new transmission infrastructure
  - Make minor updates and design changes as a result of the above.
- Include a new transmission line from the Kennedys Creek Solar Farm to the network connection point at West Mokoan Solar Farm.

In addition to the site addresses listed above, the transmission line impact area also affects the following additional properties:

- Lake Mokoan Road, Winton North (Allotment 2020 Parish of Winton PP3843)
- 368 Benalla-Yarrawonga Road, Benalla (Lot 2 PS627741)
- 370 Benalla-Yarrawonga Road, Benalla (Lot 1 PS627741)
- 82 Snowy Lane, Benalla (Lot 2 LP123365)
- Benalla-Yarrawonga Road, Benalla (Lot 1 PS717978)
- 524 Benalla-Yarrawonga Road, Benalla (Lot 6 LP206524)
- 572-616 Benalla-Yarrawonga Road, Benalla (Lot 5 LP206524; Lot 4 LP206524 Lot 3 LP206524)
- Allotment 2019 Parish of Goorambat PP2704
- Snowy Lane, Benalla road reserve.

The initial design layout for the solar farm is presented in Appendix B of the Planning Report.

1.2 Scope of Work

The purpose of this surface water assessment is to define, at a high level, the likely changes in water quality, water quantity and stream stability as a result of the proposed development. It also outlines strategies to minimise and manage the potential impacts associated with changes in surface water quantity and quality.

The scope of this high-level surface water assessment is to:

- obtain and collate relevant GIS data from public sources;
- identify all watercourses and other surface water bodies within and adjacent to the study area;
- engage the Goulburn Broken Catchment Management Authority (GBCMA) to discuss flooding implications of development, identify designated waterways on the properties and seek development criteria;
- provide high level commentary on the existing site and likely changes (if at all) in water quantity, quality and stream stability as a result of the proposed development; and
- broadly outline strategies to minimise and manage any likely adverse impacts resulting from the discharge of stormwater from the site to the surface water receiving environment.

The scope for a more detailed flooding and water quality assessment would be developed and undertaken as part of the detailed design process.

1.3 Summary of Updates

This report has been updated to reflect the changes to the project that have occurred since the initial report was prepared in August 2019. These changes include:

- Revised project boundary
- Revised project initial design
- Updates on GBCMA engagement
- Updated references to best practice guidelines and standards
- A summary of environmental values
- High level water quality summary
- Revised mitigation measures
- Updated figures and maps

2.0 Existing Waterways and Surface Water Features

2.1 Catchment Context

The proposed site is located in the Stockyard Creek sub-catchment of the Broken River which lies approximately 4.5km west of the site. The Stockyard Creek sub-catchment has an approximate area of 87 km^2 and drains surface water from the north and south of Stockyard Creek. Figure 1 shows the extent of the Stockyard Creek catchment and general surface water flow direction.

Figure 1 Stockyard Creek sub-catchment, general flow direction and site location, outlined in red, all other sub-catchment boundaries shown in grey (Source: DELWP Mapshare 2022).

The Winton Wetlands Natural Features Reserve ('the Wetlands' formally known as Lake Mokoan) is located beyond the north eastern boundary of the site. This wetland is comprised of several additional swamps, with the two largest being Sergeants and Greens Swamp, collectively encompassing an approximate area of 3,198 hectares. The area has been described as a natural but largely reformed wetland, containing freshwater marshes and meadows that are periodically inundated.

These Wetlands are retained by a large dam embankment system on the western perimeter of the former lake. This dam isolates the Wetlands from the local sub-catchments that surround the project area. However, waterways that lie to the east of the embankment are able to naturally drain into the Wetlands.

It should be noted that whilst the approximate boundary of the Stockyard Creek sub-catchment presented in Figure 1 shows the eastern portion of the site draining into the Wetlands sub-catchment, it is likely that the dam wall and local drainage pathways across the site promote surface water flows north towards Stockyard Creek.

The Wetlands were previously fed by water from the Broken River via the engineered Mokoan Inlet Channel. This channel lies just beyond the site's southern boundary and flows east towards the Wetlands.

The former outlet for the Wetlands was the Stockyard Creek, located to the north of the site. This channelised creek previously flowed to Broken River from an engineered outlet on the lake dam.

Kennedy's Creek is situated to the west of the study area and flows north where it joins with several other smaller streams before eventually intersecting with the Stockyard Creek and Broken River. Figure 2 shows the location of the key regional waterways around the project area.

There are two key waterways within the boundary of the site. These are described in more detail in Section 2.2 of this report.

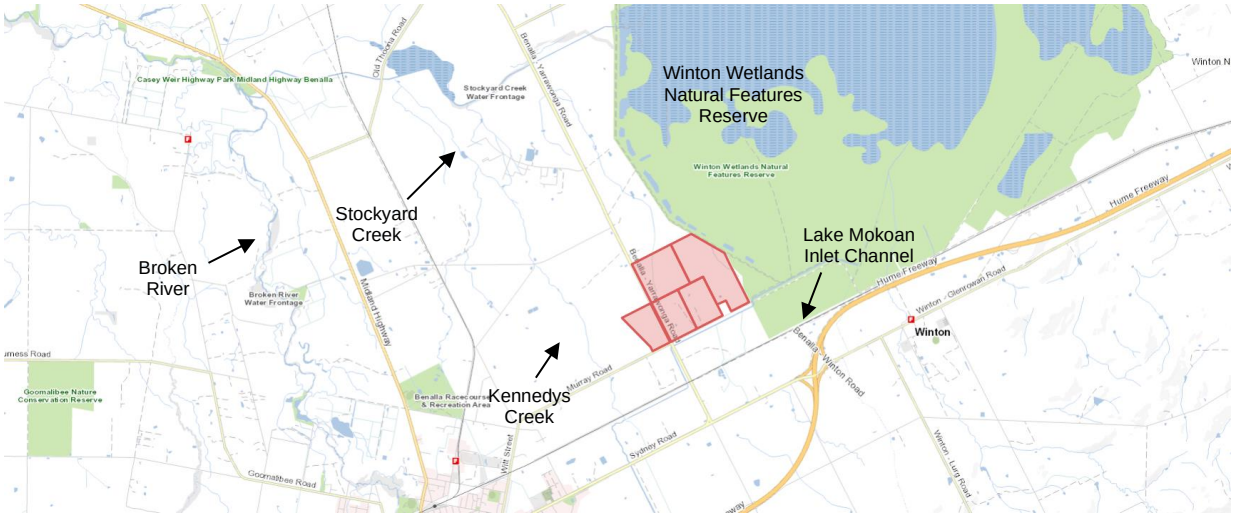


Figure 2 **Key regional** waterways around the project area (Source: DELWP Mapshare 2022).

2.2 Site Surface Water Features

The spatial data obtained indicated that the site is relatively flat, with a gentle gradient that falls to the north. The surface water features across the site are varied and include well defined drainage channels, shallow ditches and farm dams.

The channel on the eastern boundary of the site (Lake Mokoan Inlet Channel per Figure 2) appears to follow a former natural course with small meanders. However, this drainage pathway has no riparian vegetation, and the former, natural flow regime is potentially impacted by a large farm dam located in the north eastern corner of the site. Aerial imagery indicated that this channel on the eastern boundary of the site could be impacted by erosion or stream instability on some of the small meanders. However, these impacts appeared to be minor and no other waterways or drainage pathways across the site had visible signs of erosion.

On the western boundary of the site, a shallow, channelised waterway flows north from Benalla-Yarrawonga Road toward the Wetlands dam embankment. This waterway continues beyond the northern boundary of the site and connects with several farm dams before eventually discharging into the Stockyard Creek, approximately 4.5km to the north. All waterways and drainage pathways across the site are considered to be ephemeral and seasonally dry, with only the farm dams retaining water for extended periods through the drier months.

2.3 Environmental Values

The regional waterbodies provide a range of important environmental values. The Winton Wetlands Natural Features Reserve is the largest wetlands restoration project in Australia and has a specific objective to renew the ecology of the reserve. The site plays an important scientific, cultural and environmental role in the region and invites visitors to the wetlands for recreation and education.

Broken River is a major perennial waterway that also provides important environmental values for the region. The upper reaches of Broken River are used to provide the town of Benalla with potable water. Similarly, the minor tributaries and creeks of Broken River are utilised as private water supplies for remote properties and farms.

The Broken River also features extensive areas of habitat with mature trees and natural channels through its corridor. This habitat supports a diverse ecosystem and offers residents and visitors of the region recreational opportunities such as walking, birdwatching and fishing.

The majority of waterways and drainage pathways through the project area have been modified by agricultural use and are devoid of riparian vegetation. These waterways offer limited environmental value for ecology or habitat, however, they do form part of an extensive surface drainage network that connect farm dams and provide water for agriculture.

2.4 Existing Surface Water Quality

Surface water quality information is limited for the waterways close to the site and the nearest water quality monitoring locations are on Broken River.

The Victorian Index of Stream Condition (ISC) Report is a state-wide river condition assessment that has occurred since 1999. The Third ISC report is the most recent publication and provides a snapshot of water quality in the Broken River during 2010. The water quality indicators used for the condition assessment were electrical conductivity (EC), pH, total phosphorous and turbidity.

The ISC concluded that around half of the waterway reaches assessed in the Broken River Basin were in moderate condition. This included the Broken River reach at the point of connection with Stockyard Creek. Water quality in this reach was considered typical for the region with elevated levels of phosphorus and high levels of turbidity. The report concluded that these elevated results were likely associated with cleared agricultural land.

2.5 Existing Flood Extent

Flood information obtained from the GBCMA included flood maps (2017) that provide a basic estimation of the 1% Annual Exceedance Probability (AEP) flood event using 1 m flood contours (Figure 3). This flood contours were established using 1993 flood data and are an estimate only, with limited accuracy. The full extent of this flood map, including the legend and site context, is provided in Appendix A.

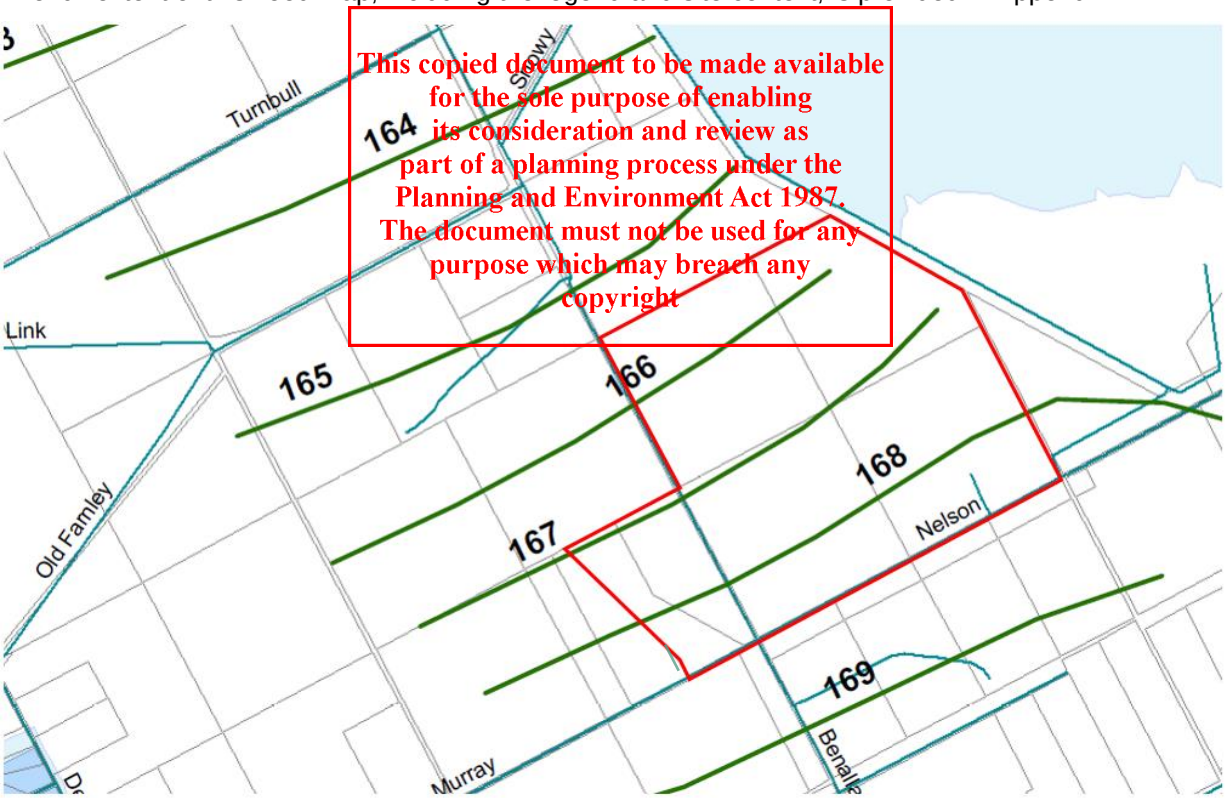


Figure 3 Predicted 1% AEP flood contours shown green (mAHD) across the proposed site outlined in red (Source: GBCMA Flood Atlas)

The GBCMA 1% AEP flood contours (refer to Appendix A) were correlated with the site survey data to determine a rough estimate of the flood depth and extent that could occur during a 1% AEP flood event.

Using this approach, it was estimated that flood depth across the site could vary from around 1.2 m in the drainage channel on the eastern boundary, to 0.5 m in the channel of the western waterway. Many areas of the central site were below 0.2 m or potentially dry (Figure 4). The full extent of this map is provided in Appendix B.

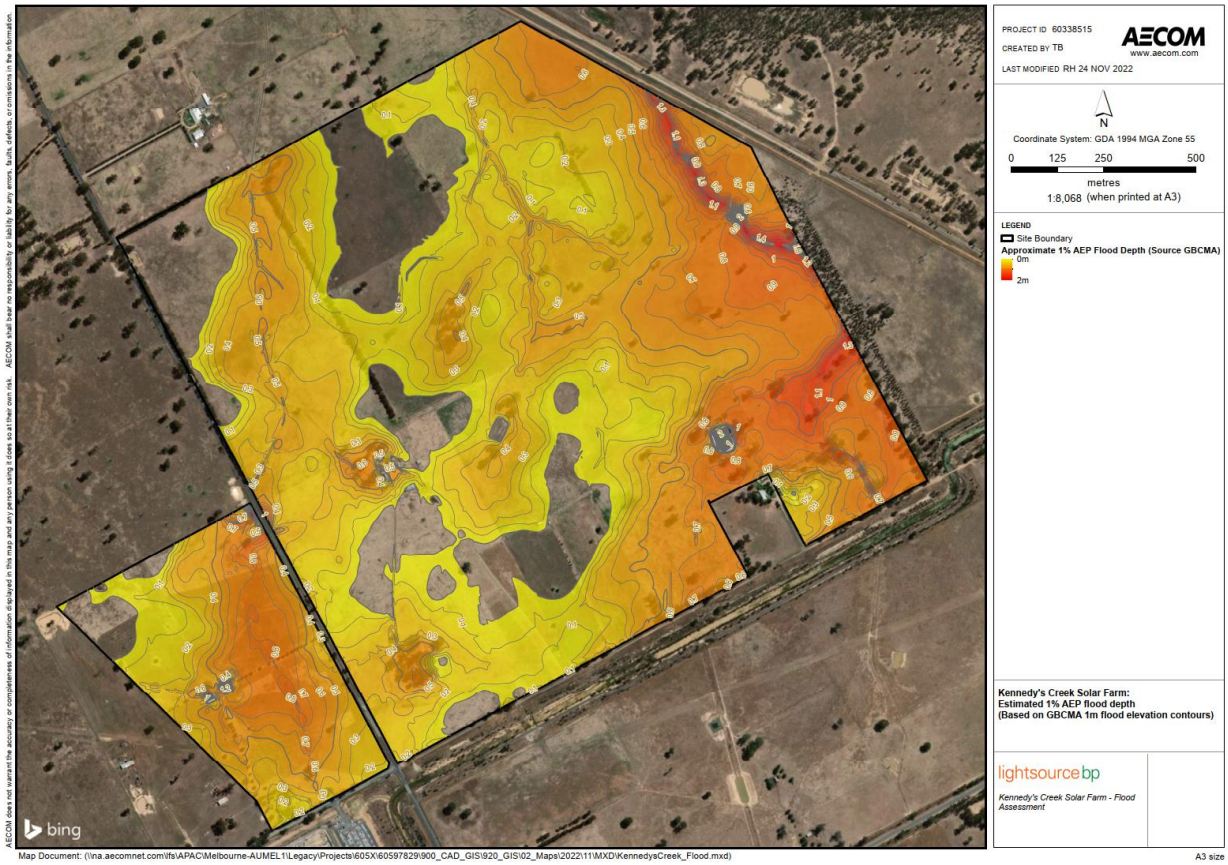


Figure 4 **Estimated 1% AEP flood depth determined by the GBCMA flood contours and site survey data.**

2.6 Flood Related Planning Controls

The site is not affected by a Land Subject to Inundation Overlay (LSIO) or Floodway Overlay (FO). The VicPlan (DELWP) mapping portal indicates the nearest area of FO occur in the town of Benalla and the lower reaches of Stockyard Creek (Figure 5). However, the Mapshare (DELWP) mapping portal shows an area defined as Floodway occurring east of the site in the Wetlands, behind the dam embankment (Figure 6).

However, it should be noted that the GBCMA Flood Atlas does suggest the land may be subject to some degree of inundation during significant flood events.

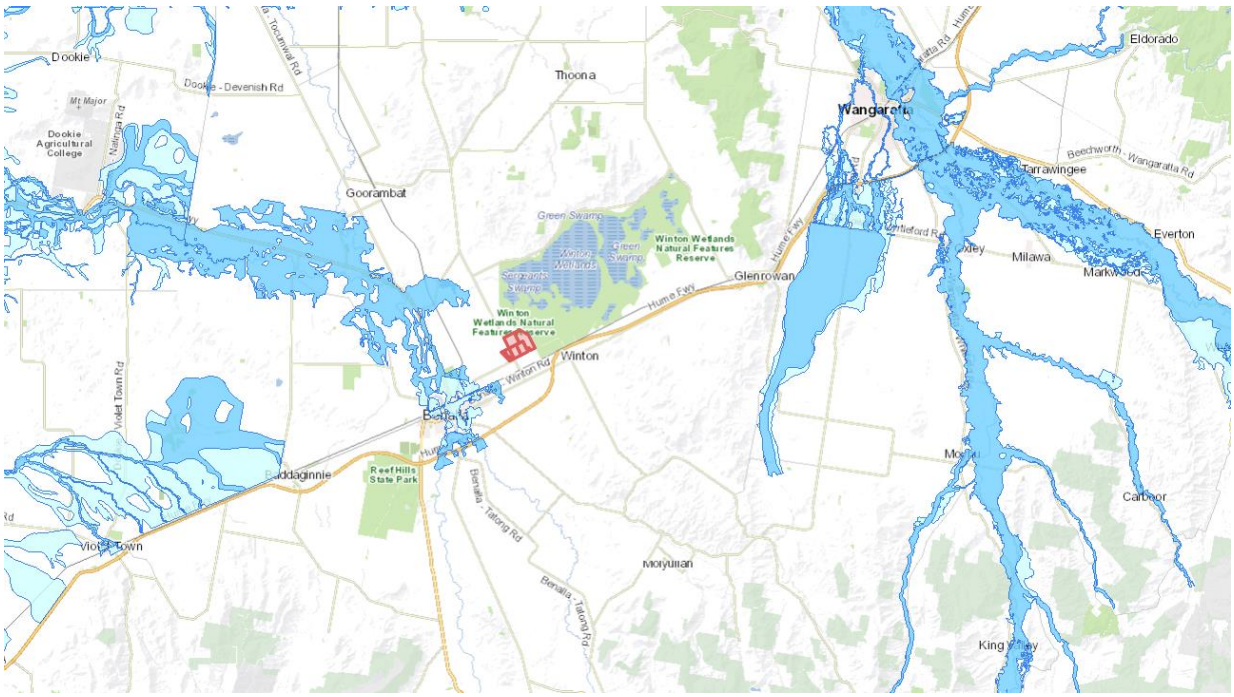


Figure 5 **Proximity of Land Subject to Inundation Overlays (light blue) and Floodway Overlay (dark blue) (DELWP VicPlan 2022).**

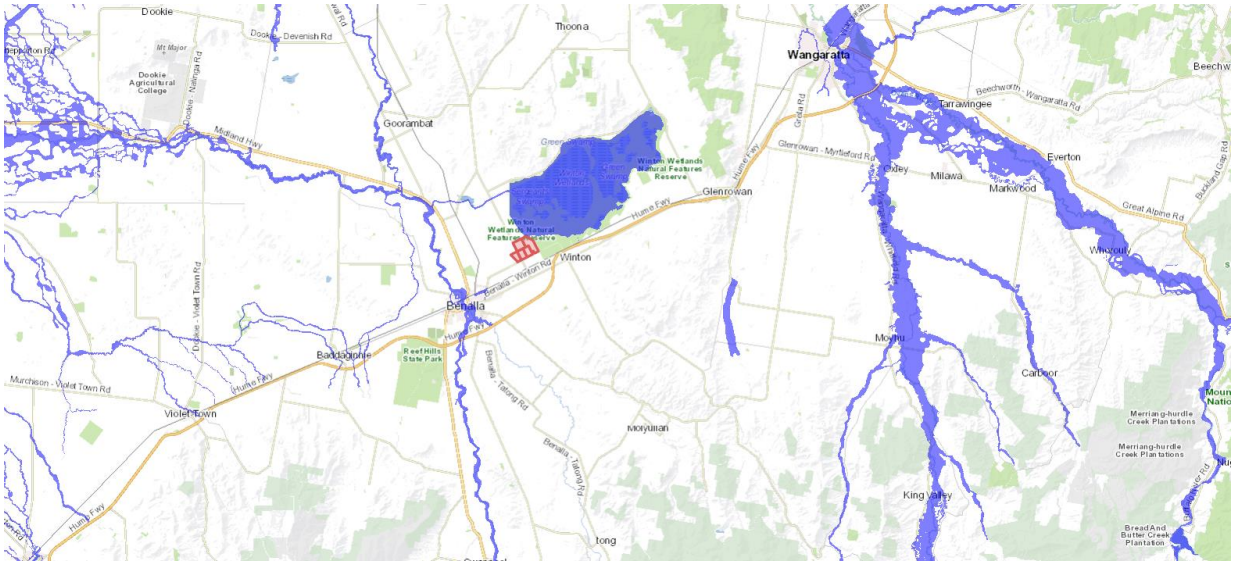


Figure 6 **Proximity of Floodway (dark blue) (DELWP Mapshare 2022).**

3.0 Water Authority Engagement

3.1 Goulburn Broken CMA Engagement

The GBCMA is the region's peak natural resource management body and is responsible for the implementation of the Regional Catchment Management Strategy. In this role, the GBCMA guides development to ensure the region's land and water resources are protected for the benefit of the region.

AECOM submitted a floodplain advice application to the GBCMA on 07 February 2019. The floodplain advice application was for the proposed project location at that time. It included additional land parcels to the west of the current site but did not include the land parcel adjacent to the Winton Wetlands dam embankment.

The GBCMA provided a response to the application on 28 February 2019 outlining their observations and subsequent conditions. Further detail is provided in the sections below. The full response is provided in Appendix C of this report.

3.1.1 Goulburn Broken CMA Observations (2019 engagement)

The GBCMA estimated the 1% AEP flood levels for the site to vary between 165.5 and 168.5 metres AHD. This estimate was established from limited 1993 flood levels. The GBCMA stated they did not hold detailed ground level information to determine depths of flooding over the site.

The GBCMA also identified a number of designated waterways across the site.

3.1.2 Goulburn Broken CMA Conditions (2019 engagement)

The response from the GBCMA indicated that they would not object to the proposed solar farm, subject to the following conditions:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 m from the nearest top of bank of waterways.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level.
3. The corridors along all waterways shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses waterways, the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

3.1.3 Further clarification and site visit (2019 engagement)

The designated waterways detailed in the diagram provided by the GBCMA highlighted some discrepancies with site survey findings and areal imagery. Subsequently, a joint site meeting was organised with the GBCMA and Goulburn Murray Water (GMW) on 2 July 2019 to discuss these waterways and determine the next steps.

The outcomes from the meeting highlighted that some of the designated waterways were not well defined. It was recommended that a waterway determination assessment should be carried out by GMW to ascertain the purpose and status of these waterways. The findings of the GMW waterway determination are presented in Section 0.

3.1.4 2022 Updates – Goulburn Broken CMA Meeting

The project team met with the GBCMA again on 24 November 2022. The purpose of the meeting was provide an update on the project and confirm the conditions that were issued in the previous floodplain advice response. The meeting concluded that the current conditions were still applicable to this project. Section 3.2 of this assessment report summarises how the outcomes from the GBCMA engagement will be adopted into the project. Goulburn Murray Water Engagement.

Goulburn Murray Water (GMW), a statutory corporation, is Australia's largest rural water corporation. It manages around approximately 70 per cent of Victoria's stored water resources, 50 per cent of Victoria's underground water supplies and Australia's largest irrigation delivery network.

3.1.5 Goulburn Murray Water, Waterway Determination

Following the July 2019 site visit, AECOM submitted a Waterway Determination application to GMW on 15 July 2019. GMW subsequently carried out the waterway determination assessment and provided a response on 30 July 2019. The full response from GMW is provided in Appendix D of this report.

3.1.6 Waterway determination assessment findings

The waterway determination for the Kennedys Creek site identified one designated waterway within the study area. This waterway is located on the north-western section of the site and flows north across a number of land titles. Figure 7 illustrates the location of the waterway. The full map extent is presented in Appendix E. Section 3.2 of this report summarises how the outcomes from the GMW engagement were incorporated into the project.

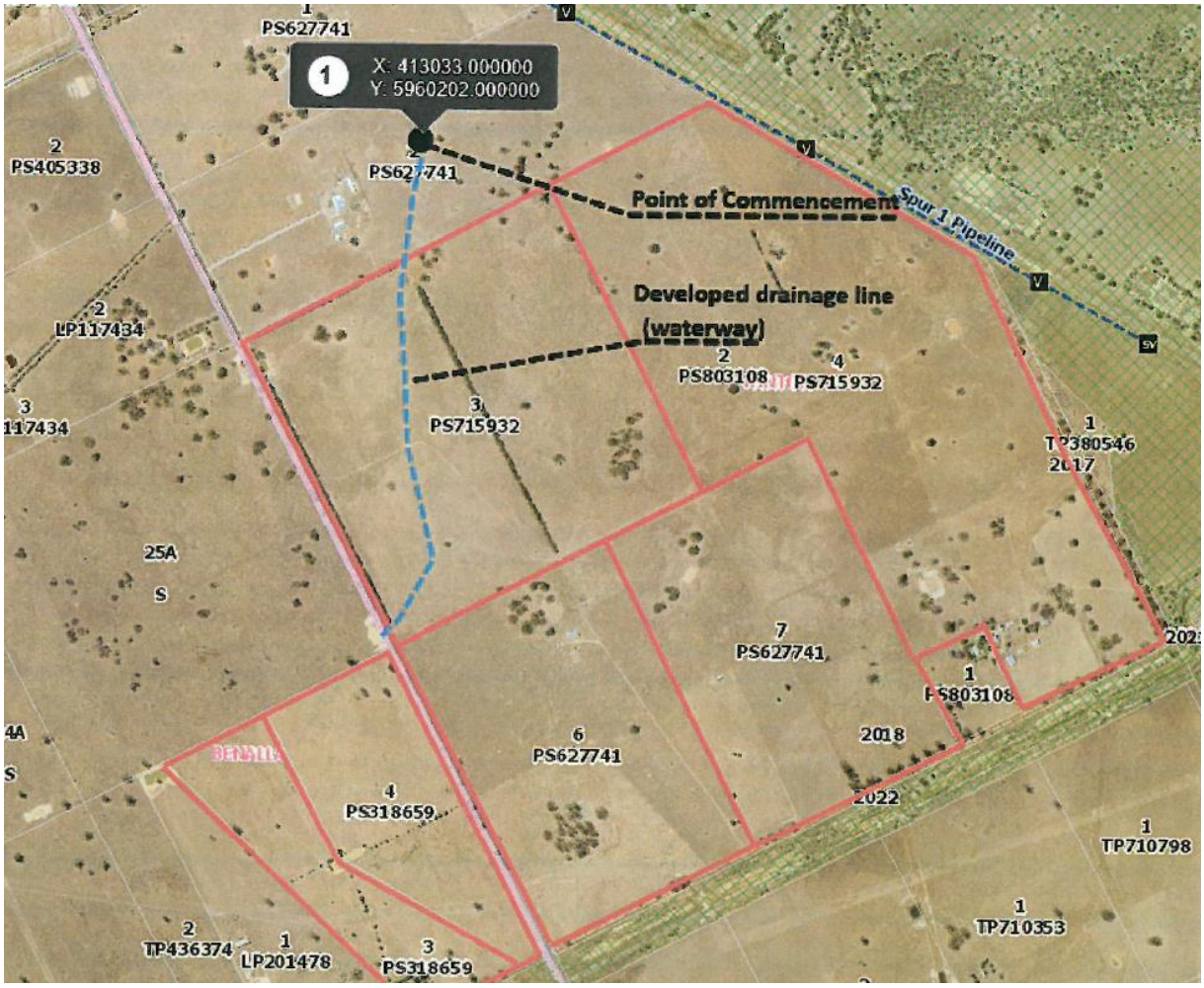


Figure 7 GMW Map illustrating the confirmed waterway on the Kennedys Creek site (shown blue).

3.2 Summary of GBCMA and GMW Engagement.

The GMW waterway determination from 2019 concluded that only one waterway on site was identified as a designated waterway. This waterway had a relatively small catchment area inside the site and no identified upstream surface water connections beyond the site boundary.

The site visit in July 2019 revealed that the existing designated waterway, and most of the drainage pathways, were either poorly defined or featured small upstream catchments. The site visit also highlighted the limited environmental values of the existing drainage pathways due to widespread cropping, the absence of riparian vegetation and drainage modifications for agricultural use.

Discussions during the site visit acknowledged this potentially low-risk surface water context and it was suggested by GBCMA that they would consider accepting reduced setbacks from the designated waterway. This discussion also confirmed that the setback could be 5 m from the top of bank, subject to approval.

In addition, engagement with GBCMA and GMW included discussion about developing the solar arrays across some of the minor drainage pathways that were not identified as a designated waterway. In this scenario, the solar arrays would use single axis trackers that are supported by single poles. Feedback from GBCMA stated that the development should be designed to ensure the existing flow pathways are maintained and avoid any unnecessary diversions. The poles supporting the single axis trackers would typically be placed at wide intervals that span minor drainage pathways and allow the uninterrupted flow of water across the site.

Feedback received during the GBCMA and GMW consultation has been considered in the design of the project. Section 4.0 presents some of the typical management measures and mitigation strategies that will be adopted.

A surface water management plan (SWMP) will also be prepared following approval to provide specific details on the drainage, flooding and water quality management measures during the construction and operational stages of the project. This SWMP will also acknowledge the GBCMA Best Practice Principles and Standards for Drainage in Dryland Catchments.

4.0 Managing Surface Water Impacts

4.1 Overview of Potential Impacts

The construction activities and proposed permanent infrastructure could change the local drainage and flood characteristics. This could potentially increase the flood risk for adjacent properties or impact low flows that supply farm dams to the north of the site.

Construction activities and permanent infrastructure can also impact water quality in the receiving waterways and aquatic environment. This risk is typically associated with ground disturbance, dewatering or spillage of fuels or chemicals.

Pollutants, such as high sediment loads and increased turbidity can enter aquatic habitats and impact natural processes including fish reproduction plant photosynthesis. Impacts of sedimentation may also increase the transport of nutrients such as phosphorous, leading to eutrophication and algal blooms in slow moving or shallow waterways.

Other pollutants, including soluble chemicals and hydrocarbons can have immediate impacts on aquatic environments leading to fish kills and loss of invertebrates. Recovery from changes in water chemistry or fuel contamination caused by spills can take years to recover. There is an increased risk of chemical and/or fuel spills during the construction phase, however once constructed, the water quality risks for the operational solar farm will be significantly reduced.

The following sections highlight some of these aspects for further consideration including measures on how these impacts will be managed. These mitigation measures will also be adopted into the SWMP.

4.2 Managing Surface Water Impacts During Construction

Construction activities will be effectively managed through the adoption of best practice pollution prevention strategies in accordance with; EPA publications 1834*: Civil Construction, Building and Demolition Guide and* 1896*, Working within or Adjacent to Waterways* and *International Erosion and Sediment Control Association (IECA) Australasia guidelines.*

Some of the measures outlined in these guidelines include:

- Development of a site-specific erosion and sediment control plan.
- Scheduling higher risk works to occur during the driest seasons or when the waterways are dry.
- Quick reinstatement of disturbed ground following completion.
- Sediment control fences downstream of work areas.
- Storage ponds to collect silty runoff (the use of flocculants will also be considered where appropriate).

4.3 Solar Arrays

Runoff from the proposed solar arrays will be intercepted by grassed, pervious surfaces and will not significantly change the fraction of imperviousness for the total area of the site. Nevertheless, the solar arrays may increase the risk of flooding or change local flow characteristics if they are sited in active flood pathways.

The solar panels will be set back at least 5 m from the top of bank of the identified designated waterway (as per GBCMA engagement detailed in Section 3.1). This will provide access for future waterway maintenance activities, on both sides of the channel.

Additionally, the solar panels will be set such that the lowest edge, at full tilt, is at least 300 mm above the predicted 1% AEP flood level.

4.4 Internal Access Roads

The initial design layout plan indicates an access road around the perimeter of the site with several 'lateral' connecting roads through the arrays. These access roads will be designed on grade to allow surface water flows to continue across the site during large flood events.

Local drainage may be required to convey flows captured in swale drains associated with the access tracks and at low points. All existing access tracks and local roads will be maintained at the current elevation.

A works on waterways permit will be sought where the access roads cross the designated waterway. All other waterway crossings will be designed in accordance with the guidance of the GBCMA.

Each waterway crossing will consider the following aspects in design:

- Required level of flood immunity
- Access track height
- Culvert type and width
- Invert level
- Culvert height
- Hydraulic assessment
- Crossing stabilisation
- Bed and batter protection
- Local drainage
- Alignment and location
- Fish passage

Further details on each of these design aspects can be found at:
https://www.gbcma.vic.gov.au/downloads/WaterwaysWorks3/Culvert.pdf

4.5 Substation Area

Substation benches can take up valuable flood storage volume and increase flood risk across the site and to neighbouring properties.

The 2019 concept plan proposed a substation area that was located across a very minor ditch. Following changes to the concept design, the substation has been relocated to the north-eastern corner of the Kennedys Creek site. There are no waterways at this proposed location, however, the GBCMA flood atlas indicates that this site location is inside the GBCMA's predicted 1% AEP flood extent.

The finished floor levels of the substation bench will be constructed 300 mm above the 1% AEP flood level as conditioned by the GBCMA.

Substation areas also present a risk of surface water contamination due to the presence of oils contained in the substation equipment and structures. Subsequently, the substation area would feature oil containment systems in their design (as specified in the network specific technical design standards). All drainage design for the substation bench will meet the drainage requirements of the Benalla Planning Scheme[1].

[1] Including but not limited to Clause 14.02 *Water*, Clause 19.03-3S *Integrated Water Management* and Clause 53.18 *Stormwater Management in Urban Development*.

4.6 Transformer Blocks

The transformer blocks (PCUs) will be distributed throughout the site, adjacent to the access tracks. Recognising the requirements of the GBCMA, the base for these structures will be set at least 300 mm above the predicted 1% AEP flood event.

4.7 New Impervious Areas

Impervious areas (e.g. concrete, roofing, transformer cabinets etc.) of the site could concentrate runoff or displace surface water storage. Stormwater drainage systems for all impervious areas will be designed to meet the drainage requirements of the Benalla Planning Scheme. This will include water quality considerations and possible treatment measure for total suspended solids, total phosphorous, total nitrogen and litter.

Stormwater discharges from these impervious areas will also consider measures that reduce the volume and velocity of stormwater runoff. These measures could include infiltration for small areas, vegetated swales or raingardens.

4.8 Site Fencing

Poorly designed fencing can collect debris and exacerbate local flood impacts. Site fencing will be designed so that it does not obstruct flood flows across the land and ongoing monitoring will be implemented through construction and operations stages to inspect impacts such as debris along fence lines. Mitigation measures are subject to further discussion with the GBCMA.

4.9 Land Remediation

Changes in soil characteristics occur primarily due to construction activities through compaction, erosion, leaching and contamination. The removal of vegetation, due to excavation activities and disturbance will also change the infiltration capacity of the soil, leading to increase runoff.

To manage these impacts, disturbed ground will be quickly stabilised and reinstated. Similarly, any land drains or ditches will be reinstated or replaced to maintain existing drainage characteristics.

4.10 Site Grading

Upstream and downstream boundaries of the site will be suitably graded with the site surfaces to retain the existing flood flow pathways across the site.

4.11 Localised Flows

It is not anticipated that runoff from the solar arrays will cause erosion. However, local drainage controls will be implemented where concentrated flows have been identified (e.g. aggregate filled drip lines below lowest panel edges).

4.12 Flood Resilience

The GBCMA flood contours indicate that parts of the site may be flood prone. This, combined with relatively flat gradient suggests water is slow to drain and the site may experience extended periods of waterlogging. The proposed infrastructure will be designed to withstand regular and extended periods of inundation. As discussed in Section 4.4, transformer blocks will comply with the GBCMA requirements relating to flooding.

4.13 Understanding Flood Risk

The GBCMA flood contours indicate the potential extent of flooding across the site. A flood study will be carried out to determine the extent, depth and flow hazards of surface water within the site.

This will directly inform the detailed design process for the locations, levels and setbacks of the new infrastructure, as well as identify locations for additional sediment and flow controls. The flood assessment methodology will be developed in consultation with the GBCMA.

4.14 Determining Flood Immunity and Levels of Service

Regulatory requirements and design guidelines typically provide the basis for subsequent design stages and associated management plans. Acceptable levels of flood immunity and levels of service provided by specific assets during flood events can vary depending on the type of infrastructure at risk. For example, access roads to a substation may require greater flood immunity, and higher levels of service, when compared to access roads that service non-critical infrastructure.

Levels of flood immunity, and associated levels of service, for each asset will be determined and agreed through cross sector collaboration and engagement (e.g. stakeholder workshop). The outcomes of the engagement process will directly inform the development of site-specific drainage and the SWMP.

5.0 Summary and Conclusions

5.1 Existing Site Context

The Kennedys Creek Solar Farm site is located on agricultural land in the Stockyard Creek sub-catchment of the Broken River. Key water features in the catchment include the Winton Wetlands Natural Features Reserve to the east of the site, and Kennedys Creek to the west.

The surface water features inside the site include a designated waterway, multiple minor drainage lines, farm dams and a small waterway toward the eastern boundary of the site. Many of these waterways and drainage pathways are poorly defined and all waterways have been impacted by agricultural use and are devoid of riparian vegetation. The hydrological regime of these waterways and drainage pathways is ephemeral with only the farm dams retaining water into the drier months.

Water quality monitoring of the waterways inside or adjacent to project site has not been carried out and there does not seem to be any water quality data that is publicly available. However, the Third ISC Report summarises the receiving reach of Broken River to be in moderate condition with elevated phosphorous and turbidity that may be attributed to agricultural land use in the catchment.

5.2 Engagement

The project team engaged the GBCMA in 2019 and in 2022 following updates to the project, to gain an understanding of potential flood risks for the site and to determine the potential conditions that would be applied for the proposed development.

The GBCMA provided a flood atlas that showed the estimated flood elevation and extent for a 1% AEP flood event, based on the 1993 flood levels. The GBCMA also provided a map of designated waterways across the site.

A site meeting was held on 02 July 2019 with GBCMA and GMW to discuss the project and assess the waterways around the site. This site visit confirmed the waterways were poorly defined and a decision was made to carry out a waterway determination assessment. This assessment was carried out by GMW and it was confirmed that one of the waterways was a designated waterway, in the north western corner of the site.

The site discussion also provided an opportunity to discuss the GBCMA development conditions and the management measures that would typically be applied to meet these conditions. The upstream catchment for the waterway on the site was limited by the Mokoan Inlet Channel that traversed along the southern boundary of the site. This channel intercepts flows from the south and there do not appear to be any waterways connecting to the site from the southern boundary.

This limited catchment area, combined with the modified agricultural setting, prompted discussion on the potential to reduce the setbacks from the waterway. A reduced setback of 5 m from the top of bank was suggested by the GBCMA, subject to approval.

In November 2022, the project team met with GBCMA to present the key project updates and confirm the status of the development conditions. It was concluded that these conditions, including the potential reduced setback were still relevant and appropriate for this project.

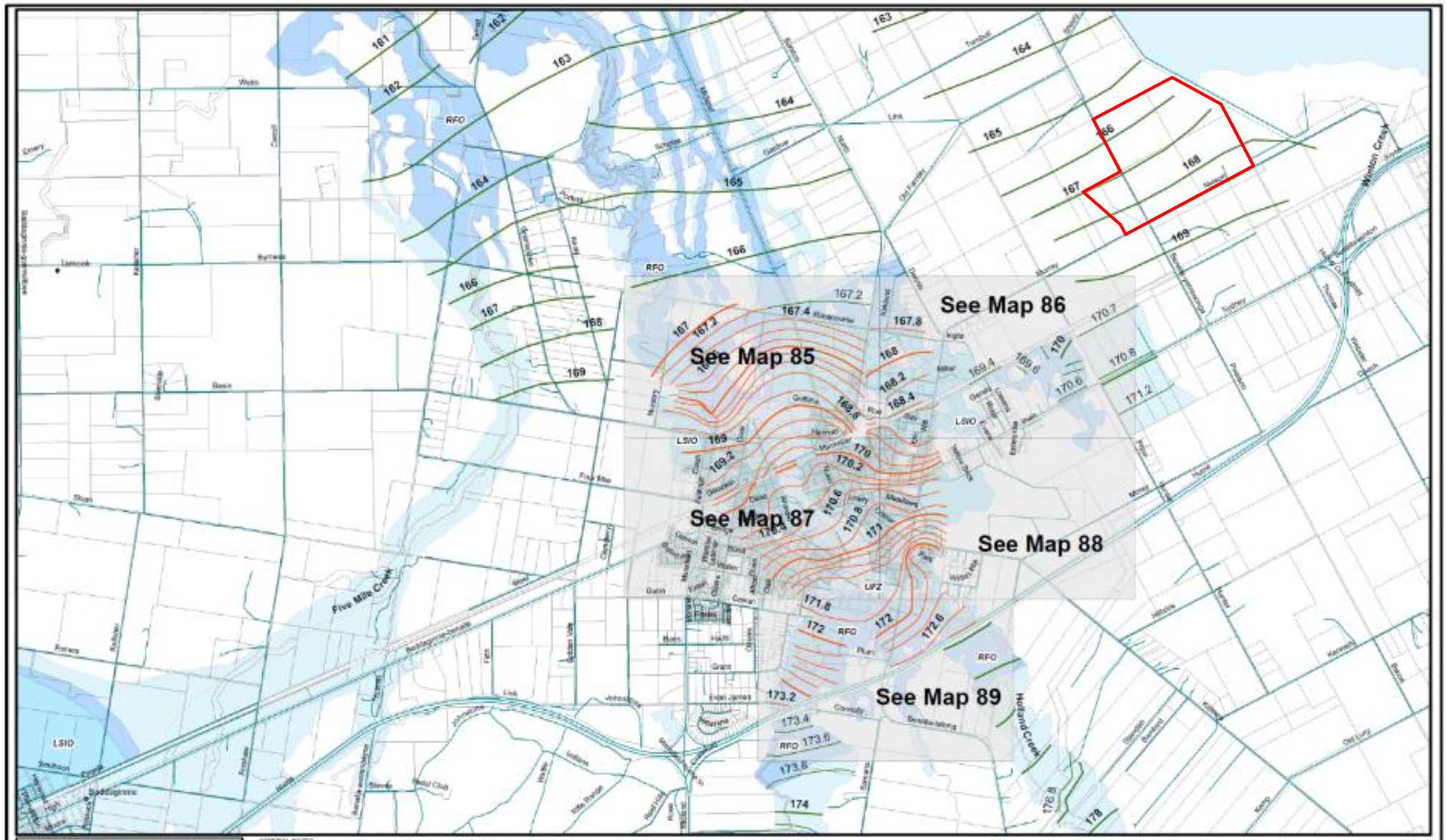
5.3 Managing Surface Water Impacts

The Kennedys Creek Solar Farm will adopt the development conditions proposed by the GBCMA floodplain advice and the reduced setback of 5 m for the designated waterway. The project will also be developed in accordance with current regulatory requirements, industry best practice standards and guidelines to ensure the existing hydrological regime, flood risk and water quality conditions are protected.

A key instrument of the project will be the development of the SWMP following the successful lodgement of the planning application. This SWMP will set out the site specific detail on how surface water will be managed and protected during construction and operation.

Appendix A

1% Flood Level Contour Atlas



MAP KEY

GENERAL NOTES

The concepts and information contained in this document are the copyright of the Goulburn Broken Catchment Management Authority. Use or copying of the document in whole or in part without written permission of the Goulburn Broken CMA constitutes an infringement of copyright.

The Goulburn Broken Catchment Management Authority does not warrant that this document is definitive nor free of error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

Cadastral information is supplied by Department of Sustainability and Environment

This map has been prepared using the best available data and mapping techniques. The accuracy of this map however, is not absolute and reflects only the accuracy of the data and techniques used. This information is subject to change where new information is found or determined from future studies.

NOTES ON DECLARATION AND BEST ESTIMATED FLOOD LEVELS

The flood level lines shown on this plan define the surface level of the "1% probability flood". Where flood level declarations have occurred, this is the flood prescribed by Section 204 of the Water Act 1989, for floodplain management purposes and has a 1 in 100 chance of being equalled or exceeded in any one year. Other flood level contours represent the best estimate of the 1% probability flood.

The derivation of these 1% flood level lines has been based on available historical flood level and flow information, hydrologic and hydraulic modelling.

Areas outside the 1% probability flood limit may be inundated by rarer flood events.

For the purpose of determining flood levels for locations between flood level lines, it can be assumed that the flood surface levels change at a uniform rate between flood level lines.

The flood level lines shown on this plan can be used to assist in the determination of designated levels in accordance with Clause 6.2 of the Building Regulations 1994.

Although there may be buildings within the area covered by the flood level lines, it should not be assumed that the floor of any individual building is below flood level. Buildings should be surveyed to determine whether their floors are above or below the 1% flood level.

FLOOD OVERLAY INFORMATION

This map showing Urban Floodway Zone (UFZ), Floodway Overlay (FO or RFO) and Land Subject to Inundation Overlay (LSIO) are indicative only and not to be used as a substitute over the planning scheme maps.

0 0.25 0.5 1 1.5 2 Kilometres
Scale 1:50,000 at A3

Legend

- Declared/Designated Flood Contours (metres AHD)
- Best Estimated Flood Contours (metres AHD)
- Land Subject to Inundation Overlay
- Floodway or Rural Floodway Overlay
- Urban Floodway Zone
- Known Levees
- Irrigation Channels
- Waterways
- Roads
- GBCMA Waterway Boundary

DEPARTMENT OF FINANCE AND ADMINISTRATION

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

1% FLOOD LEVEL CONTOUR ATLAS

Date: 30 June 2009

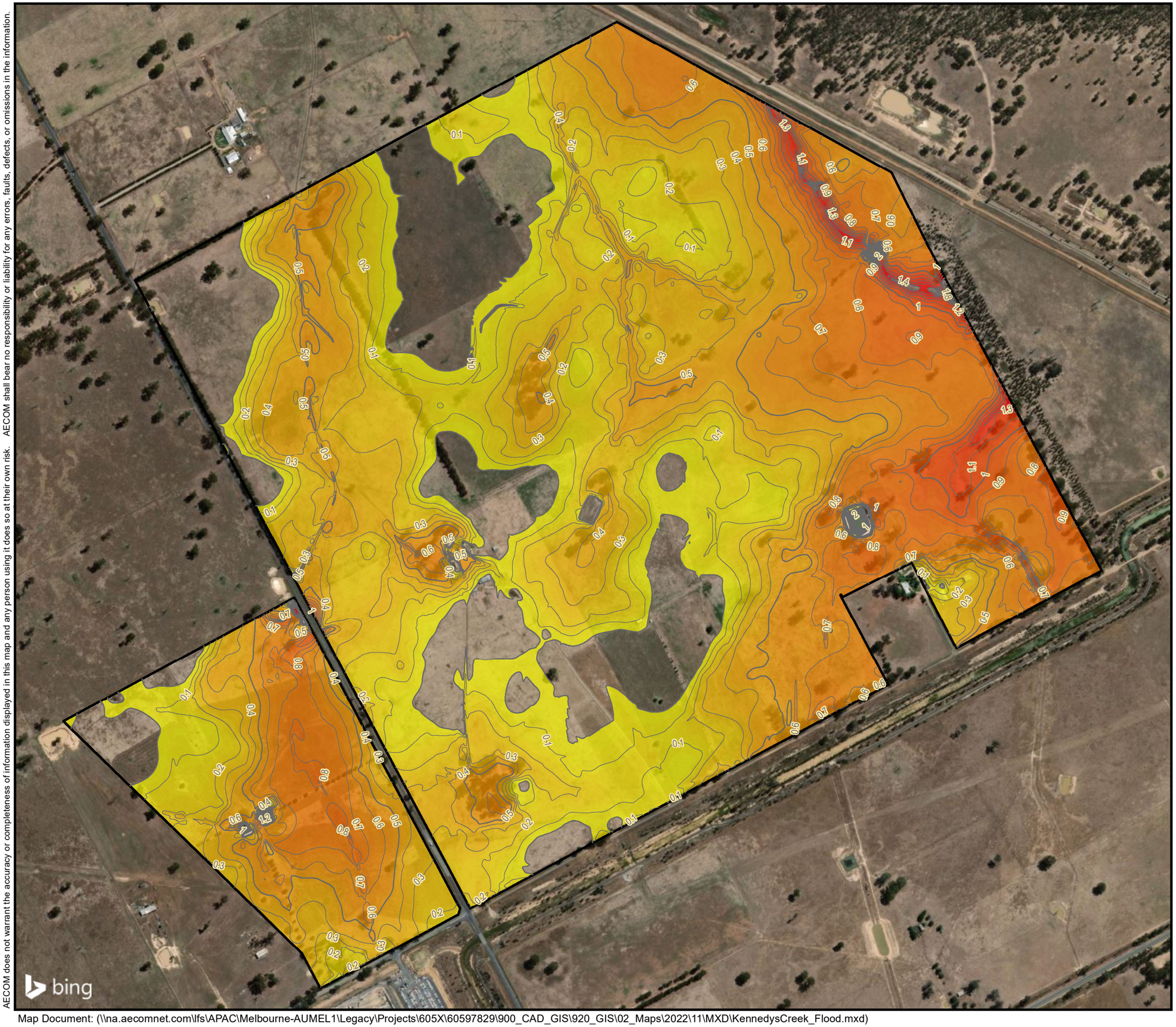
42 of 104

540335

24-Feb-2023
Prepared for – 4

Appendix B

Estimated 1% AEP flood depth (GBCMA flood contours and site survey data)



PROJECT ID 60338515

CREATED BY TB

LAST MODIFIED RH 24 NOV 2022

AECOM
www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55

0 125 250 500

metres

1:8,068 (when printed at A3)

LEGEND

Site Boundary

Approximate 1% AEP Flood Depth (Source GBCMA)

0m

2m

Kennedy's Creek Solar Farm:
Estimated 1% AEP flood depth
(Based on GBCMA 1m flood elevation contours)

lightsource bp

Kennedy's Creek Solar Farm - Flood Assessment

Map Document: (\\na.aecomnet.com\lfs\APAC\Melbourne-AUMEL1\Legacy\Projects\605X\60597829\900_CAD_GIS\920_GIS\02_Maps\2022\11\MXD\KennedysCreek_Flood.mxd)

A3 size

Appendix C

GBCMA Floodplain Advice

Our Ref: GBCMA-F-2019-00090
Document No: 1

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Date: 28 February 2019

Mr Tony Barrett
AECOM Australia Pty Ltd
727 Collins Street
Melbourne VIC 3008 tony.barrett@aecom.com

Dear Mr Barrett

Floodplain Management Advice for
Proposed Solar Farm
Lot 4, Plan PS318659
226 Murray Road Benalla Vic 3672

Thank you for your application dated 07 February 2019, received by the Goulburn Broken CMA on 07 February 2019, regarding the above matter.

The Goulburn Broken CMA's assessment of the above information has determined that the proposed development location is covered by the Industrial 1 Zone, Industrial 2 Zone, Road Zone - Category 1, Road Zone - Category 2 in the Benalla Planning Scheme.

The Authority's best estimate of the 1% AEP flood levels for the location described above varies from 165.5 and 168.5 metres AHD (see Figure 1), which was established from limited 1993 flood levels. The Authority has no detailed ground level information to determine depths of flooding over the site.

Figure 1 also shows a number of designated waterways that traverse through the site. In this regard, the waterways should remain free from obstruction with vegetated corridors.

In the light of the above information, the Goulburn Broken CMA would not object to the proposed solar farm, **subject to the following conditions**:

1. Inverter and transformer blocks, any buildings, infrastructure and solar panels must be located a minimum of 30 metres from the nearest top of bank of the waterway shown in Figure 1.
2. The finished floor levels of inverter and transformer blocks and any buildings are to be set at least 300 millimetres above the applicable 1% AEP flood level as shown in Figure 1.

www.gbcma.vic.gov.au

SHEPPARTON
Head Office
168 Welsford Street
PO Box 1752
Shepparton VIC 3632
Tel: (03) 5822 7700
Fax: (03) 5831 6254

BENALLA
89 Sydney Road
PO Box 124
Benalla VIC 3672
Tel: (03) 5822 7700

YEA
5/10 High Street
Yea VIC 3717
Tel: (03) 5797 4400

3. The corridors along all waterways, as shown in Figure 1, shall be revegetated in accordance with the Revegetation Guide for the Goulburn Broken Catchment (https://revegetation.gbcma.vic.gov.au/).
4. Where fencing crosses waterways, as shown in Figure 1, the fencing shall be designed such that it does not obstruct flood flows. For example, farm type fencing, large open mesh (150 mm centres), vertical pool style fencing (150mm centres), fencing that lifts with the floodwater or similar.

Figure 1: Showing estimated 1% AEP flood contours and designated waterways.

Note, where access roads cross the waterway shown in Figure 1 a works on waterways permit will be required from the Goulburn Broken CMA.

Please Note:

- This document contains floodplain management advice only. It does not constitute approval from any other statutory body. It is your responsibility to obtain any other required approvals.
- The 100-year ARI flood is not the maximum possible flood. There is always a possibility that a flood larger in height and extent, than the 100-year ARI flood, may occur in the future.

If you have any queries, please contact me on **(03) 5822 7700**. To assist in handling any enquiries please quote **GBCMA-F-2019-00090** in your correspondence. Please note that all electronic correspondence should be directed to planning@gbcma.vic.gov.au.

Yours sincerely

Guy Tierney
Statutory Planning and Floodplain Manager

Information contained in this correspondence is subject to the definitions and disclaimers below.

Definitions and Disclaimers

1. The area referred to in this letter as the 'proposed development location' is the land parcel(s) that, according to the Authority's assessment, represent(s) the location identified by the applicant. The identification of the 'proposed development location' on the Authority's GIS has been done in good faith and in accordance with the information given to the Authority by the applicant(s) and/or local government authority.
2. While every endeavour has been made by the Authority to identify the proposed development location on its GIS using VicMap Parcel and Address data, the Authority accepts no responsibility for or makes no warranty with regard to the accuracy or naming of this proposed development location according to its official land title description.
3. **AEP** as Annual Exceedance Probability – is the likelihood of occurrence of a flood of given size or larger occurring in any one year. AEP is expressed as a percentage (%) risk and may be expressed as the reciprocal of ARI (Average Recurrence Interval).
4. **ARI** as Average Recurrence Interval - is the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event. For example, floods with a discharge as large as or larger than the 100-year ARI flood will occur on average once every 100 years.
5. **AHD** as Australian Height Datum - is the adopted national height datum that generally relates to height above mean sea level. Elevation is in metres.
6. No warranty is made as to the accuracy or liability of any studies, estimates, calculations, opinions, conclusions, recommendations (which may change without notice) or other information contained in this letter and, to the maximum extent permitted by law, the Authority disclaims all liability and responsibility for any direct or indirect loss or damage which may be suffered by any recipient or other person through relying on anything contained in or omitted from this letter.
7. This letter has been prepared for a proposed Solar Farm and is for the use only of the party to whom it is addressed and no responsibility is accepted to any third party for the whole or any part of its contents. Neither the whole nor any part of this letter or any reference thereto may be included in any document, circular or statement without the Authority's written approval of the form and context in which it will appear.
8. The flood information provided represents the best estimates based on currently available information. This information is subject to change as new information becomes available and as further studies are carried out.
9. ***The responsible authority may use this information within 90 days of this letter.***

Appendix D

GMW Waterway Determination

GOULBURN-MURRAY WATER

Our Ref: #A3638601
Your Ref: PN8195390

Tony Barrett
AECOM - c/o Link Development Pty Ltd
Collins Square, Level 10, Tower 2
727 Collins St.
MELBOURNE VIC 3008

30 July 2019

Kennedy's Creek Solar Farm proposal

Dear Tony,

I refer to a recent inspection by Goulburn-Murray Water Diversion Inspector Ben Ives on the properties listed below.

Lots 2,3,4,5, Plan of Subdivision 206524, Parish of Goorambat
Lots 3 & 4, Plan of Subdivision 318659, Parish of Winton
Lots 6 & 7, Plan of Subdivision 627741, Parish of Winton
Lot 4, Plan of Subdivision 715932, Parish of Winton
Lot 3, Plan of Subdivision 715932, Parish of Winton

The purpose of this inspection was to undertake a "Waterway Determination" on these properties to identify any existing waterways. The commencement point of a waterway was located at co-ordinates Zone 55, Eastings: 413033, Northings: 5960202, on Lot 2 PS627741, Parish of Winton.

A "Waterway Determination" is made by matching criteria used by Goulburn-Murray Water to determine if there is a waterway/watercourse at the site, as defined under Section 3 of the Water Act 1989.

As a result of the inspection, our findings show there is a waterway at the specific site inspected on this property at the above coordinates. It was identified during the inspection that the waterway traverses a number of the land titles described above. In accordance with your advice, the purpose of the Waterway Determination is in relation to a proposed Planning Permit application.

There may be additional drainage lines, depressions or gullies that may require protection from development by means of setbacks. A map showing the location of the significant drainage lines, depressions or gullies is attached for your information.

Additionally, please be advised that the application has not been assessed for potential impacts on surface or groundwater quality and this letter is not prior written approval of the development proceeding.

PO Box 165 Tatura Victoria 3616 Australia | Email reception@gmwater.com.au | Phone 1800 013 357 | Website www.gmwater.com.au

GMW's interest is with the protection of surface water and groundwater and an assurance that proposed developments will not impact detrimentally on the flow and quality of surface water and groundwater. Any required water supplies must be from an available approved source.

Any proposed works planned on the waterway for the purpose of 'take and use' will require approval in the form of a Works Licence from Goulburn-Murray Water. The Goulburn Broken Catchment Management Authority are the licensing authority for any other works.

You are advised that you may require a planning permit from your Local Shire Council for the building and associated works and it is your responsibility to obtain permits as necessary.

Should you require any further information on this inspection please do not hesitate to contact Diversion Inspector Ben Ives at the Shepparton office of Goulburn-Murray Water on (03) 58 227 958 .

Yours sincerely

Cathy Wood
CUSTOMER SERVICE MANAGER
DIVERSIONS CENTRAL

cc Goulburn Broken Catchment Management Authority
cc Benalla Rural City Shire
cc GMW Stat Planning Unit – Ranine McKenzie