

03 May 2023

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Flood assessment in support of the Warringah Golf Course planning proposal

Dear Gina

Northern Beaches Council (NBC) engaged Stellen Consulting (Stellen) to provide flood advice in support of a planning proposal that seeks to amend the Warringah Local Environmental Plan 2011 (WLEP 2011) by including a Schedule 1 Additional Permitted Use for a registered club on the site of the Warringah Recreation Centre, North Manly.

The planning proposal is required to support a draft Concept Plan which proposes the relocation of the Warringah Golf Club (Club) clubhouse to the Warringah Recreation Centre site together with the re-development of community tennis facilities and on-site parking. The draft Concept Plan is provided in Appendix B.

The site is located within the Manly Lagoon catchment and is subject to flooding during large storm events (see Manly Lagoon Flood Study). Due to the flood affectation of the site, any planning proposal must be assessed against the relevant flood controls, policies and standards applicable to the land.

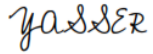
The planning proposal has been assessed against the flood controls contained within the following:

- Warringah Development Control Plan (2011) E11 Flood Prone Land
- Guidelines for Development on Flood Prone Land (NBC website [here](#), March 2023)
- Northern Beaches Council, Water Management Policy – Flood Risk Management (2017)
- Floodplain Development Manual (NSW Government, 2005)
- Considering flooding in land use planning guideline (2021)
- NSW State Government's Ministerial Direction 9.1 – 4.1 Flood Prone Land (2022)

Based on the detailed review of the flood flooding constraints applicable to the site (see Appendix A), the planning proposal, if carried out in accordance with the recommendations of the attached report, is consistent with the relevant requirements of the policies and guidelines above and is supported by Stellen Consulting.

Please contact me if you have any questions.

Yours sincerely,



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Appendix A – Review of flood controls

1.0 Introduction

Northern Beaches Council (NBC) engaged Stellen Consulting (Stellen) to provide flood advice in support of a planning proposal that seeks to amend the Warringah Local Environmental Plan 2011 (WLEP 2011) by including a Schedule 1 Additional Permitted Use for a registered club on the site of the Warringah Recreation Centre, North Manly.

The planning proposal is supported by a draft Concept Plan which proposes relocating the Warringah Golf Club (Club) clubhouse to the Warringah Recreation Centre site and re-development of community tennis facilities and on-site parking. The draft Concept Plan is provided in Appendix B

1.1 Previous reports

The site is located within the Manly Lagoon catchment and is subject to flooding during large storm events. Council has previously completed the Manly Lagoon Flood Study, by BMT WBM in August 2013. Due to the flood affectation of the site, any planning proposal must be assessed against the relevant flood controls, policies and standards applicable to the land.

In November 2022, Stellen completed a Flood Management Report (P171112-RP-FL-001-02, see Appendix D) supporting the proposed Concept Plan for the New Warringah Golf & Community Club House.

2.0 Purpose of this report

The site is currently zoned as a Public Recreation RE1, and a registered club use type is not permitted under the LEP. The Warringah Recreation Centre, North Manly, would like to include this additional Permitted Use for a registered club on the site.

The site is flood affected according to the Manly Lagoon Flood Study. Any Planning Proposals seeking to rezone land must be assessed in accordance with the NSW State Government's Ministerial Direction 9.1 – 4.3 Flood Prone Land and must demonstrate that the flood risk to future occupants and structures can be appropriately managed through the available legislative framework.

The purpose of this report is to provide an assessment of the applicable flood controls and demonstrate that if the planning proposal to amend the LEP, allowing a registered club on the site is approved, the development and construction of the new clubhouse is not precluded as a result of the flood affectation of the land.

2.1 Existing development

The site, known as Warringah Recreation Area (Lot 2742 DP 752038), is approximately 1.04 ha. The existing development of the site consists of a clubhouse, golf course, squash court, sporting courts, driveway, and car parking (the boundary of the proposed development within the existing site is shown below in Figure 1).

- Risk Precinct: Areas designated as medium risk, and Brookvale Creek is identified as being within the High Flood Risk Precinct, as shown in Figure 3 - A.
- Hydraulic Category: Council's flood data (Appendix B) suggests the floodwater depth across the site during a 1% AEP event peaks are not more than 0.3m, and the velocity x depth product is less than $0.3 \text{ m}^2\text{s}^{-1}$ presenting a Flood Fringe hydraulic category. Therefore, planning proposal areas designated in Flood Fringe, and Brookvale Creek is identified as being within the floodway, as shown in Figure 3 - B.
- Life Hazard Category: Areas designated as H5, and Brookvale Creek is identified as being within the H6 Life Hazard, as shown in Figure 3 - C.

For the main building assessment, the council has suggested that all floor levels within the development shall be at or above the Flood Planning Level (FPL) (flood level + 300mm freeboard). Given that the depth across the site during a 1% AEP event peak is not more than 0.3m and the velocity x depth product is less than $0.3 \text{ m}^2\text{s}^{-1}$, The 300mm freeboard would be sufficient for the proposed planning for the registered club.

Stellen Consulting reviewed the survey report, and the DEM model used in the provided TUFLOW model, and both show that the level at the site is at RL 3.0 mAHD.

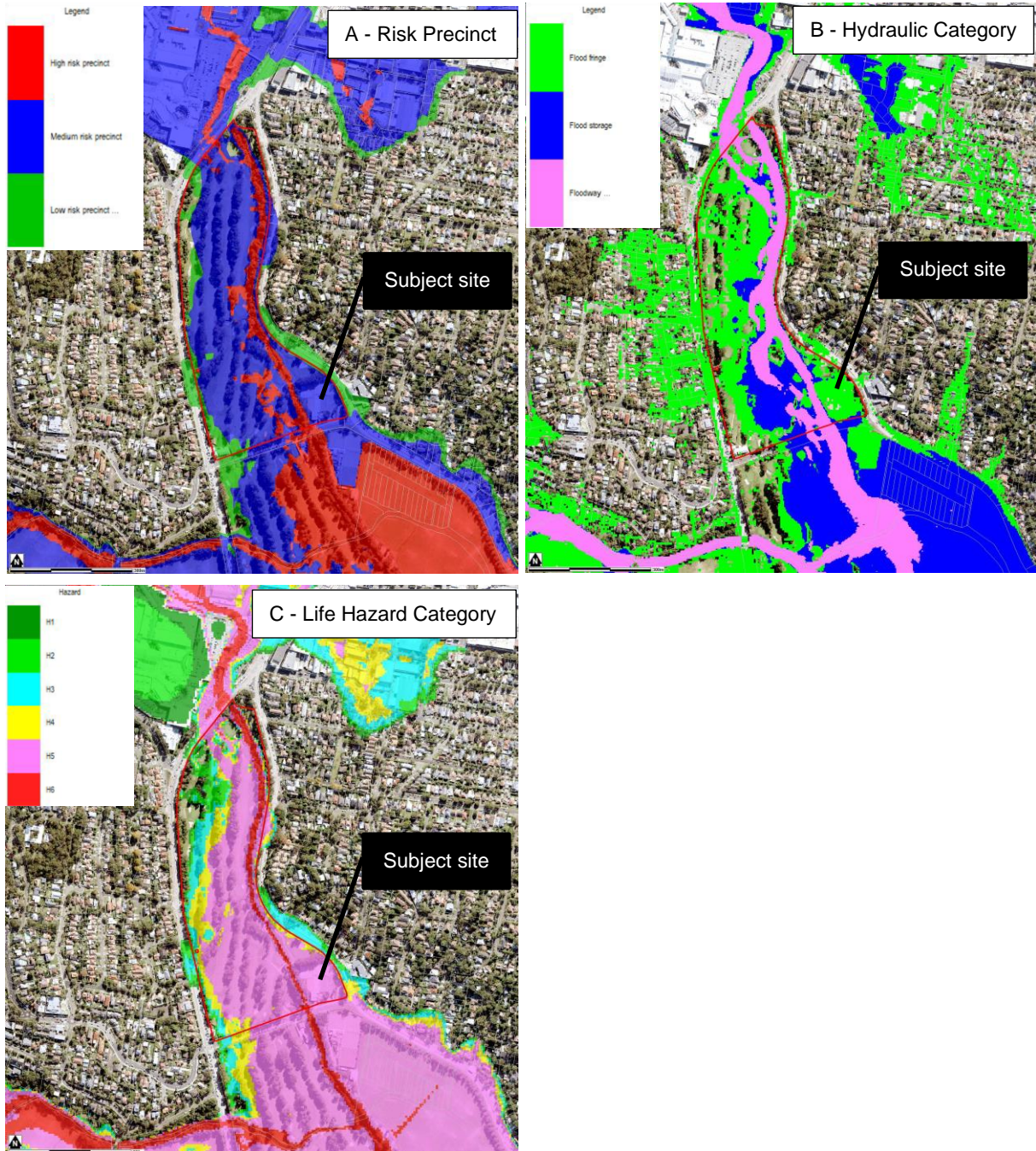


Figure 3 - Flood Information during the 1% AEP event

4.0 Flood assessment - Applicable controls, guidelines, and standards

The following standards, codes and guidelines have been used to provide an assessment of the planning proposal for the site. Compliance with each of the standard's codes and guidelines is discussed in detail in the following sections and summarised below in Table 1.

Table 1 - Compliance with applicable standards, codes and guidelines

Applicable standard, code and/or guideline	Compliance
Warringah Development Control Plan (2011) E11 Flood Prone Land	Complies
Guidelines for Development on Flood Prone Land (NBC website here , March 2023)	Complies
Northern Beaches Council, Water Management Policy – Flood Risk Management (2017)	Complies
Floodplain Development Manual (NSW Government, 2005)	Complies
Considering flooding in land use planning guideline (2021)	Complies
NSW State Government's Ministerial Direction 9.1 – 4.1 Flood Prone Land (2022)	Complies

4.1 Warringah DCP E11 Flood Prone Land - Complies

Development of the land for a Registered Club use type would need to comply with the applicable controls contained within Clause E11 of the Warringah DCP.

A Flood Management Report according to the Development on Flood Prone Land Guidelines would need to be submitted to the DA, The report must demonstrate that the proposed development meets all the flood requirements of Clause E11 of the Warringah DCP.

Where a property is affected by more than one Flood Risk Precinct or has varying Flood Life Hazard Category across it, the assessment must consider the controls relevant at each location on the property.

Based on Warringah DCP, A registered club would fall under the Business & Industrial category, and the site areas for the proposed planning categorised as a Medium Flood Risk Precinct. Therefore, the applicable controls contained within Clause E11 of the Warringah DCP comply with the proposed planning for assessing the registered club are summarized below in Table 2.

Table 2 - controls applied for registered club within a medium Risk precinct.

	Description	Controls
A	Flood Effects Caused by Development	A1 A2
B	Building Components and Structural Soundness	B1 B2 B3
C	Floor Levels	C1 C2 C3 C4 C6 C7

D	Car Parking	D1 D2 D3 D4 D5 D6
E	Emergency Response	E1
F	Fencing	F1
G	Storage Of Goods	G1
H	Pools	H1

Based on a review of the applicable controls, using the land as a registered club would not be prohibited. See Stellen Consulting report P171112-RP-FL-001-02, Appendix D, for a detailed assessment of the applicable planning controls for the proposed Concept Plan for the site.

4.2 Guidelines for Development on Flood Prone Land – Complies

According to the guideline, a Flood Management Report must be submitted with any Development Application on flood-prone land for Council to consider the potential flood impacts and applicable controls. For the proposed registered club, a Flood Management Report would be required as the proposed registered club is within the Medium Flood Risk Precinct.

The flood Management report must demonstrate how a proposed development will comply with flood planning requirements, particularly the development controls outlined in the relevant LEP and DCP clauses for the registered club and stated above in section 4.1. The report must detail the design, measures and controls needed for compliance. The preparation of a flood management report must include the following:

- Description of Development
- Flood analysis
- Assessment of the impact
- Emergency response plan

Based on our review of the guideline, the requirements of the policy can be addressed with a site-specific flood risk assessment submitted as part of any proposed DA to redevelop the site and does not prohibit construction or the use of a registered club on-site.

4.2.1 Planning requirement for development on flood-prone land

The guideline required planning development to comply with the requirement set out in the relevant Local Environment Planning (LEP) and Development Control Plan (DCP).

Warringah LEP (2011) – 6.3 Flood Planning stated that Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:

- is compatible with the flood hazard of the land, and
- is not likely to affect flood behaviour resulting significantly adversely in detrimental increases in the potential flood affectation of other development or properties, and
- incorporates appropriate measures to manage risk to life from flood, and
- is not likely to affect the environment significantly adversely or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses, and
- is not likely to result in unsustainable social and economic costs to the community because of flooding.

Based on the above, the proposed change of use is compatible with the flood hazard of the land and wouldn't inherently create any of the above issues.

4.3 Northern Beaches Council, Water Management Policy – s10 Flood Risk Management – Complies

This section of Council's Water Management Policy outlines the strategic and operational objectives/outcomes, in which council aim to reduce the impact of flooding and reduce private and public losses from flooding.

The proposed change of use complies with the outcomes/objectives with regard to flooding and wouldn't inherently create any compliance issues with s10 of the policy.

The above is demonstrated in the provided Flood Risk Assessment of the proposed Concept Plan, see P171112-RP-FL-001-02, Appendix D.

4.4 Floodplain Development Manual requirements – Complies

The primary objective of the New South Wales Flood Prone Land Policy is to reduce the impact of flooding and flood liability on individual owners and occupiers of flood-prone property and to reduce private and public losses resulting from floods.

According to the NSW flood risk management manual, the fundamental principle of floodplain risk management is to assess development applications within the strategic framework of a floodplain risk management plan and not in isolation or individually, and the balance management plans must address existing flood risk, future flood risk, and continuing flood risk. However, councils are encouraged to incorporate appropriate floodplain risk management planning provisions into LEPs, DCPs and development control policies.

Council has previously completed the Manly Lagoon Flood Study and provided comprehensive flood information with flood advice, as attached in Appendix C. summary of flood impact to the proposal planning is available in section 3.0 Flooding

Since the existing District Park Tennis and Squash Centre will be inundated with floodwaters arising from flooding within Brookvale Creek, evacuation during a 1% rain event is not possible. Consideration for mitigating losses resulting from floods during 1% AEP needs to be measured to reduce the impact on the proposed planning (registered club occupancy).

The proposed registered club development shall not be approved unless it can be demonstrated in a Flood Management Report that in all events up to the 1% AEP event there is no net loss of flood storage.

Provided that any future development addresses the objectives and controls listed above, the NSW Flood Prone Land Policy would not preclude the development of the land as a registered club use.

4.5 Considering flooding in land use planning guideline – Complies

The Department of Planning, Industry and Environment (DPIE) provides advice to councils regarding flood-related land use planning and areas where flood-related development controls should apply. The guideline is consistent with the NSW Government's Flood Prone Land Policy (the policy), set out in the NSW Floodplain Development Manual (the manual) published in 2005, which supports the resilient development of flood-prone land. Therefore, compliance with NSW Government's Flood Prone Land Policy and NSW Floodplain Development Manual will comply with this guideline.

The guideline requires that the full range of floods up to and including the PMF be considered when undertaking strategic land planning proposals. The manual sets out key issues relating to managing risk to existing and future occupants of flood-prone land that need consideration in land use planning. These include the following:

- Safety of people, including evacuation considerations
- Management of flood risk, to reduce flood damage to public and private property and infrastructure.
- Management of the impacts of development, including cumulative impacts of development
- Application of development controls
- Management of the impacts of development on emergency services.

In addition to the above controls, The DPIE is required to apply flood planning areas (FPAs) and Special Flood Considerations (SFCs).

The Flood Planning Level (FPL) is a combination of the flood level from the Defined Flood Event (DFE) and freeboard selected for flood risk management purposes. The typical freeboard for residential development due to flooding from waterways, such as rivers or creeks, is 0.5m. A lower freeboard or an alternative approach to freeboard may be used where the consequences to people and property of low-probability flood events are assessed as minor through the FRM process.

For this planning proposal of the registered club, 0.3m freeboard will be sufficient considering that depth across the site during a 1% AEP event peak is not more than 0.3m and the velocity x depth product is less than $0.3 \text{ m}^2\text{s}^{-1}$. Besides, Section 4.1 Warringah DCP E11 Flood Prone Land of this report recommends a list of controls based on Warringah DCP E11 Flood Prone Land for Business and Industrial use development to assess the proposed registered club, which is consistent with a floodplain risk management plan and guidelines of the Floodplain Development Manual 2005

SFCs also apply to land that, in the event of a flood, may cause a particular risk to life and require the evacuation of people or other safety considerations such as Hospitals with emergency facilities, seniors housing, Hotels, educational establishment, childcare or other sensitive uses that required a high level of assistance with evacuation. SFCs also applied for Hazardous industries or Hazardous storage. A registered club would not fall under any of these categories and is not applicable.

In addition, the proposed planning of the registered club is proposed above FPL. The flood risk assessment in the Stellen report (P171112-RP-FL-001-02, see Appendix C) advised that a shelter-in-place is the recommended emergency response plan during critical storm events until floodwaters subside or emergency services advise otherwise.

A registered club development would require an emergency response plan to be implemented as part of the development. The emergency response should comply with the requirement and the Guidelines for Development on Flood Prone Land, this being shelter-in-place refuge. It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; a torch with spare batteries; a first aid kit; emergency power; and a practical means of medical evacuation.

Provided that any future development addresses the objectives and controls listed above, the NSW Flood Prone Land Policy would not preclude the development of the land as a registered club use.

4.6 NSW State Government's Ministerial Direction 9.1 – 4.1 Flood Prone Land - Complies

The objectives of this direction are to:

- a) Ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and
- b) Ensure that the provisions of an LEP that apply to flood prone land are commensurate with flood behaviour and includes consideration of the potential flood impacts both on and off the subject land.

Council's flood controls have been prepared in accordance with this Ministerial Directive and provided that any future development of the land is consistent with the Council's flood controls, the development would also comply with the requirements of 4.1 Flood Prone Land.

The proposed site is within a flood fringe area (see Appendix C) and is not classed as Floodway (which prohibits development). Development of the land as a registered club is possible, provided that the land use under the LEP is changed to permit this.

5.0 Conclusions of Proposed Planning Assessment

The site is currently zoned as a Public Recreation RE1, and a registered club use type is not currently permitted under the LEP. The Warringah Recreation Centre, North Manly, would like to include this additional Permitted Use for a registered club on the site.

The planning proposal has been assessed against the flood controls contained within the following:

- Warringah Development Control Plan (2011) E11 Flood Prone Land

- Guidelines for Development on Flood Prone Land
- Northern Beaches Council, Water Management Policy – Flood Risk Management (2017)
- Floodplain Development Manual (NSW Government, 2005)
- Considering flooding in land use planning guideline 2021
- NSW State Government's Ministerial Direction 9.1 – 4.1 Flood Prone Land (2022)

For any future development which includes a Registered Club use type, compliance with the controls contained within the Warringah DCP E11, as detailed in this report, would mean that the planning proposal is consistent with a floodplain risk management plan prepared in accordance with the principles and guidelines of the Floodplain Development Manual 2005 and accordingly permissible under Ministerial Section 9.1 Direction 4.1.

Based on the detailed review of the flooding constraints applicable to the site, the planning proposal, if carried out in accordance with the recommendations of the attached report, is consistent with the relevant requirements of the policies and guidelines above and is supported by Stellen Consulting.

Appendix B

Architectural Drawings

The planning proposal at Warringah Golf Club is described in the following Group Architects drawings dated 12/10/2022

- 🔖 Sheets and Views
 - 🔖 CLEANED WARRINGAH-000
 - 🔖 CLEANED WARRINGAH-001
 - 🔖 CLEANED WARRINGAH-002
 - 🔖 CLEANED WARRINGAH-003
 - 🔖 CLEANED WARRINGAH-D01
 - 🔖 CLEANED WARRINGAH-100
 - 🔖 CLEANED WARRINGAH-101
 - 🔖 CLEANED WARRINGAH-101a
 - 🔖 CLEANED WARRINGAH-101b
 - 🔖 CLEANED WARRINGAH-101c
 - 🔖 CLEANED WARRINGAH-102
 - 🔖 CLEANED WARRINGAH-103
 - 🔖 CLEANED WARRINGAH-104
 - 🔖 CLEANED WARRINGAH-200
 - 🔖 CLEANED WARRINGAH-201
 - 🔖 CLEANED WARRINGAH-202
 - 🔖 CLEANED WARRINGAH-300
 - 🔖 CLEANED WARRINGAH-900

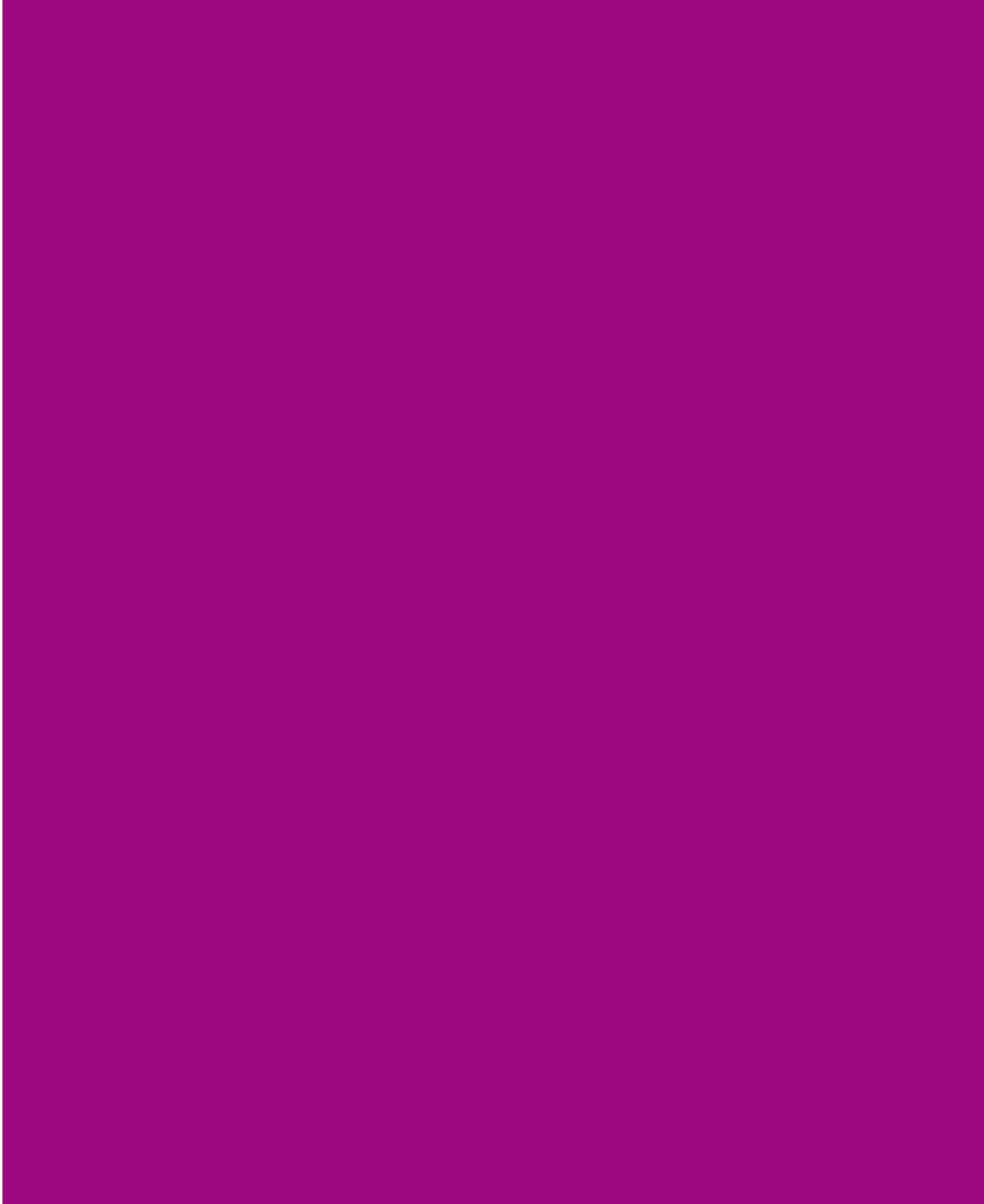
Civil Design Drawings

The Civil design is described in the following Stellen Consulting drawings dated 09/11/2022:

CV-000	Revision 1	Master Plan
CV-001	Revision 2	Civil Design Master Plan
CV-100	Revision 1	Cut/Fill Plan – Main Building and Access
CV-102	Revision 2	Cut/Fill Plan – Tennis Court

Appendix C

Council Supplied Flood Information



Appendix D

Flood Management Report for the development of the New
Warringah Golf & Community Club House at 433 Pittwater Road
North MANLY dated 09/11/2022