15 September 2023

Mr Stephen O'Donoghue
Director Resource Assessment
Department of Planning & Environment
Locked Bag 5022
PARRAMATTA NSW 2124

**Via**: Planning Portal

Dear Steve

**Re: Albion Park Quarry – Stage 7 (SSD-10369) RFI 8 and RFI9**

I refer to the Department's Requests for Information RFI8 and RFI9 dated 11 August and 14 September 2023 respectively. RFI8 sought additional information in relation to the proposed final landform and associated water balance and site access, as well additional mitigation measures to ameliorate heritage-related impacts on "The Hill Complex." RFI9 sought a response to the advice provided by WSP dated 13 September 2023. The following provides a response to the matters raised.

## Final Landform Design, Water Balance and Water Licencing

*The Department considers that the company should investigate all its options to overcome existing water licence constraints (for example, trading of water licences, purchase of a new water licence, or alternative scenario) to ensure that the best rehabilitation outcomes for the site are pursued. Information should also be provided about constraints in the water sharing plan in relation to take of water during low rainfall / flow periods.*

*The Department requests that you provide the following information.*

- *Final landform water balance (assuming non-draining landform) based on 10th percentile rainfall and 80th percentile rainfall.*

### Response

Cleary Bros understands that the Department has concerns regarding the ability of the proposed final landform to satisfy the "low maintenance" rehabilitation objective identified in the EIS, and in particular how this would be managed in perpetuity.

To address these concerns, further detail is provided on:

- potential options for the final landform and the constraints posed by each of these options;
- a water balance for a non-free draining final landform; and
- whether adequate water licencing is available or could be obtained for a non-free draining final landform.

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### *Final Landform Options*

Three final landform options have been considered for the final landform as follows.

1. Current proposal as per the Amendment Report – internally draining Southern Sump with pipeline outflow.
2. Original proposal as described in the EIS – internally draining Southern Sump with permanent water body.
3. Alternative proposal – backfilling of Southern Sump catchment to create free-draining landform.

The works required to undertake each of the options presented would be identical until the final few years of the Project. As such, if planning priorities were to change during the Project life, or technological improvements made, there would be the opportunity to optimise the proposed final landform as part of the closure planning process.

*Option 1 - Internally draining Southern Sump with pipeline outflow*

The advantages of Option 1 include the following.

- It can be constructed in a timely manner as part of the closure process.
- It would involve the use of structures commonly used in the civil construction environment.
- It would require minimal ongoing maintenance, as evidenced by the fact that similar drainage structures are commonly used for stormwater management.
- It would provide for a safe and stable outcome with continued productive use of the final landform.

Potential risks associated with post-closure management of the proposed pipeline could be addressed through a funding arrangement to allow perpetual maintenance of the inlet structures and pipe liner. Maintenance of other parts of the final landform would be no greater than what would be required on any rural property. This funding could be provided using a similar framework as to that which exists for the total fund deposit of biodiversity stewardship agreements. Alternatively, caveats to ensure the maintenance of the pipeline and infrastructure could be applied to the certificate of title for the property if required.

In addition, risks of failure could be managed through the use of redundancies in the design, such as through the duplication of the pipeline.

The designs of the inlet and outlet structures and pipeline liner are indicative only at this stage, as it is likely that best practice designs will have changed over the next 30 years. Nevertheless, the concept design currently proposed would create a landform with minimal ongoing maintenance, consistent with a gross pollutant trap in a residential setting.

In light of the above, Option 1 is Cleary Bros' preferred option.

*Option 2 - Internally draining Southern Sump with permanent water body*

The advantage of Option 2 would include no requirement to manage a discharge pipeline.

However, there are numerous disadvantages associated with this option, as follows.

- Reduction in the productive use of the land when compared to Option 1 or 3. This is due to the reduced grazing potential of the land that may be covered intermittently or permanently by water.
- Lost flows to natural drainage, with the Extraction Area being permanently excised from the Rocklow Creek Catchment, with the resulting loss of flow.
- Reduced water quality over time. As the Extraction Area would not discharge for many years and the resulting waterbody would be subject to evaporation, water quality would be expected to gradually decline, thereby posing risks of pollution of groundwater or surface water post closure.
- There are also significant risks associated with securing sufficient entitlements to water under the relevant Water Sharing Plan to permit this option (see discussion below).

In light of the above, Option 2 is not Cleary Bros' preferred option.

*Option 3 - Backfilling of Southern Sump catchment to create free-draining landform.*

This option would require imported material to be placed such that the full footprint of Stage 7 drains to the Western Sump, and thus creates a free-draining landform without the need for a pipeline.

The advantages of Option 3 include the following,

- A backfilled, productive final landform that would drain to the Western Sump.
- Low ongoing maintenance of the final landform.
- Substantially lower highwalls.

However, the principal disadvantage of Option 3 would be the additional time required to complete the Project. In particular, this option would require a minimum of 3.4Mm$^3$ or approximately 6.8Mt of additional material imports. At the proposed maximum import rate of 100,000tpa, this would require a further 68 years post extraction to complete. Alternatively, following the cessation of quarrying, material imports could be increased to 900,000tpa without significantly changing project-related impacts, including to air quality, noise, and transport. Assuming sufficient and suitable material were available, backfilling operations could be completed in as little as 7 years post extraction.

Due to the potential long timeframe required for closure and risks associated with the availability of fill material, Option 3 is not Cleary Bros' preferred option. However, this option would be considered during preparation of the pre-closure rehabilitation plan 5 years prior to closure of the Quarry. If suitable material were to be available at that time to allow for completion of imports within 7 to10 years, Option 3 would be the preferred option.

### *Water balance for a non-free draining final landform - 10$^{th}$ and 80$^{th}$ percentile annual rainfall*

Tables 38 and 39 of the *Soil and Surface Water Assessment* that accompanied the EIS (SEEC, 2021) presented a water balance for the operational stages of Stage 7 as it was originally proposed in the EIS. The previous response to RFI 5, RFI 6 and RFI 7 dated 26 July 2023 presented a water balance for the Stage 7 final void based on:

- the assumptions used by SEEC (2021);
- annual average rainfall and pan evaporation; and
- the catchment areas presented in SEEC (2023) (see **Attachment A**).

In order to estimate a water balance for the 10th and 80th percentile annual rainfall for a non-free draining landform, gridded SILO data for the closest grid point to the Project Area (-34.60, 150.80) were obtained for the period 1889 to 2022. All other assumptions were as described above.

**Table A** presents the final landform annual water balance for the 10th and 80th percentile rainfall years, as well as for the median rainfall year. For each year selected, Morton's Shallow Lake Evaporation data was also extracted from the SILO database.

Assuming both the Western and Southern Sumps were freely discharging surface water from the final landform (as per Option 1 above), 90.2ML and 185.2ML per year would be expected to be discharged to Watercourse 3 in 10th and 80th percentile rainfall years respectively.

In the event that the proposed discharge pipe from the Southern Sump were completely blocked or a non-free draining landform was established, 52.6ML and 108.8ML of water would be retained within the Southern Sump of the final void in 10th and 80th percentile rainfall years respectively in the first year.

An analysis of rainfall runoff versus evaporation from a non-free draining Southern Sump indicates that the water level in the Southern Sump would rise slowly over a period of approximately 90 "average" years post closure, with a surplus of rainfall runoff over evaporation in an average rainfall year. At this time, the Southern Sump would have enlarged to hold approximately 3,100ML of water. Evaporative losses would increase as the surface area of the water body increased, with only a small surplus of rainfall runoff over evaporation in an average rainfall year at the point at which the Southern Sump would connect to and discharge via the Western Sump. At this point, it is likely that the Stage 7 Extraction Area would discharge only during wet years and, consequently, the water quality would be expected to progressively deteriorate due to evaporative concentration.

**Table A**
**Post Stage 7 Water Balance**

| Source | Catchment Area ($m^2$) | Annual Rainfall (mm) | Runoff Coefficient | Average Annual Runoff (ML) | Estimated Sump Area ($m^2$) | Morton's Shallow Lake Evaporation (mm) | Average Annual Evaporation Loss (ML) | Total Annual discharge (ML) | |
|---|---|---|---|---|---|---|---|---|---|
| **10th Percentile Rainfall** | | | | | | | | | |
| Western Sump | 132,500 | 727 | 0.4 | 38.5 | 750 | 1,280 | 1.0 | 37.6 | 90.2 |
| Southern Sump | 191,500 | | 0.4 | 55.7 | 2,400 | | 3.1 | 52.6 | |
| **Median Rainfall** | | | | | | | | | |
| Western Sump | 132,500 | 1,114 | 0.4 | 59.0 | 750 | 1,218 | 0.9 | 58.1 | 140.5 |
| Southern Sump | 191,500 | | 0.4 | 85.3 | 2,400 | | 2.9 | 82.4 | |
| **80th Percentile Rainfall** | | | | | | | | | |
| Western Sump | 132,500 | 1,459 | 0.4 | 77.3 | 750 | 1,219 | 0.9 | 76.4 | 185.2 |
| Southern Sump | 191,500 | | 0.4 | 111.8 | 2,400 | | 2.9 | 108.8 | |
| Source: SILO Database (https://www.longpaddock.qld.gov.au/silo/point-data/ - accessed 17 August 2023) | | | | | | | | | |

### *Water Licencing*

In the event that water is retained in the Southern Sump of the final landform (refer Option 2), **Table A** identifies that surface water take would be approximately 82ML in a median year, and approximately 53ML and 109ML in 10th percentile and 80th percentile years respectively.

The final landform is located within the *Minnamurra River Water Source* of the *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2023* (Water Sharing Plan). In the event that water is retained in the Southern Sump of the final landform, surface water allocations to the *Minnamurra River Water Source* would be required. This could be securely sourced through purchasing sufficient shares in the water source, or by applying for additional Controlled Allocations as they are released.

The *Minnamurra River Water Source* forms part of the *Illawarra Rivers Extraction Management Unit*. Under the Water Sharing Plan, water shares are not able to be transferred into the *Minnamurra River Water Source* from another water source, and as such water shares available to the Project are limited. There are currently 805 shares of the Minnamurra River Water Source held privately, with two trades comprising a total of 13 shares having traded since the commencement of the previous Water Sharing Plan in 2011. There have been no Controlled Allocations of surplus shares for the *Minnamurra River Water Source,* suggesting the water source is already fully allocated. As shares cannot be traded in from another water source, and there have been no controlled allocations, the only way to secure shares is by purchasing them from existing shareholders. No annual entitlements ("temporary" trades) have been traded since the Water Sharing Plan was first introduced in 2011.

Cleary Bros contacted each of the 13 private individuals and businesses holding 16 or more shares to the *Minnamurra River Water Source* in 2022, offering to purchase any shares that were surplus to the holders needs at above market rates. This represented 628 of the 805 shares held by private individuals and companies (1 share has translated to 1ML in each of the past 10 years). Note Shellharbour City Council owns a further 99 shares to this water source. While productive discussions were held with some parties, ultimately no individuals or businesses contacted were interested in selling any of their shares under the Water Sharing Plan. As such, it is unlikely that sufficient shares could be secured to guarantee entitlements to the anticipated surface water take (82 shares in a median year).

Cleary Bros notes that 227 shares are held by Dunmore Sand and Soil, and while they have advised these are currently fully utilised under their development consent, it is possible that some shares may become available at some point in the future following completion of dredging activities at the site.

There may be the opportunity to purchase entitlements (previously termed a "temporary trade") each year from shareholders who do not intend to use their full entitlement. While greater entitlements would be required in a "wet" year due to increased surface water runoff and capture, it is expected that there would be more unused entitlements in such a year that may be able to be purchased from shareholders. However, it is probable that shareholders will have fewer surplus entitlements that are able to be sold in a dry year, and, as such, there would likely be difficulties in securing sufficient entitlements to account for the water take. Nevertheless, there remains a significant likelihood that entitlements would not be available to meet the required surface water take in any given year, and therefore the likelihood of unavoidable take contrary to the operation of the Water Sharing Plan.

### *Conclusion*

In light of the above, Option 1 - Internally draining Southern Sump with pipeline outflow, remains the preferred option due to the productive ongoing land use generated by the landform, the short time required for completion, the modest legacy which is consistent with a small residential subdivision, and the certainties provided around water licencing and availability of fill material. Cleary Bros believe the ongoing costs and risks associated with the proposed final landform are consistent with the ongoing maintenance of rural infrastructure such as dams and water supply works.

## Final Landform Water Volumes

*The Department requests that you provide the following information.*

- *Tabulated final landform water balance that provides surface water inflows for a 1% AEP and 10% AEP events*
- *Estimated sizes of the western and southern sumps at 4 hours, 10 hours, and 24 hours during both a 1% and 10% AEP event assuming the proposed pipeline is draining effectively*
- *Estimated size of the southern sump at 4 hours, 10 hours, and 24 hours during a 1% and a 10% AEP event assuming the pipeline is not draining any water.*

### Response

Cleary Bros engaged Strategic Environmental and Engineering Consulting (SEEC) to undertake a hydrological review of the proposed final landform, including the proposed pipeline (SEEC, 2023). That report was originally presented with the Response to RFI5, RFI6 and RFI7 and has been amended to address the requirements for RFI8. The amended report is presented as **Attachment A**. In summary, SEEC determined the following.

- Surface water flows to each of the catchments associated with the proposed final landform.
- The volume of the Western Sump under a 1% and 10% AEP rainfall event. That assessment determined that the maximum volume of the Western Sump would peak rapidly, before falling within the nominated 4-hour window.
- The volume of the Southern Sump under a 1% and 10% AEP rainfall event for a free draining and non-free draining scenario.
  - Under the free draining scenario, the peak volume of the Southern Sump would be 25,865$m^3$ and 56,287$m^3$ respectively, with the accumulated water draining away over 50 hours and 117 hours respectively.
  - Under the non-free draining scenario, the peak volume of the Southern Sump would be 37,540$m^3$ and 87,554$m^3$ respectively.

## Final Landform Cross Section

*The Department has identified that the final landform cross section included in the amended project description represents the horizontal distances incorrectly, i.e. the pit floor in cross section C is 500m wide. The Department requests that the cross-sections are updated with the correct scaling.*

### Response

**Figure A** presents the final landform sections with the correct scale.

## Final Landform Site Access

*Shellharbour City Council DA No. 614/2006 requires the quarry access/haul road to be formalised as a right of way to be established on Lot 2, DP858245. The Department requests confirmation that a right of way for the quarry access/haul road has been placed on Lot 2, DP858245 and that access to the final landform would be available in perpetuity.*

### Response

**Attachment B** presents a copy of the title for Lot 2, DP858245. The title identifies an easement on the title for access between Lot 420, DP1252087 and Lot 1, DP858245 while ever hard rock quarrying occurs on the neighbouring landholding. Cleary Bros are currently negotiating with the landholder of Lot 2, DP858245 regarding the continued use of this easement in perpetuity. In the event that an agreement for perpetual use of the easement is not reached, access to the Project Area following rehabilitation of the final landform would be via the western section of the existing Dunsters Lane road reserve, which joins Lot 1, DP848245 at the entrance of the current haul road access. While the road reserve is not currently subject to a formed road, Sections 5 and 6 of the Roads Act 1993 provide a right of access to Lot 1, DP858245 via the road reserve.

## Impacts on Historic Heritage Values

*The Department requests that you provide additional information that:*

- *considers additional mitigation measures to minimise the potential visual amenity impact of the project on the heritage values of The Hill Complex;*
- *mitigation measures that could be applied on land owned by Cleary Bros; and*
- *mitigation measures that could be established on The Hill Complex, with the agreement of the landholder and subject to a historic heritage management plan*

### Response

Cleary Bros has considered additional visual mitigation measures that could be implemented on its own land and proposes to reinstate the previously proposed tree screen on the northern boundary of the Extraction Area (**Figure B**). Existing vegetation immediately outside the northeastern boundary of the Extraction Area would be retained and provide a continuous tree screen in this area. These tree screens would provide additional mitigation of visual amenity impacts of the Project from *The Hill Complex.*

Furthermore, the visual transects previously provided from Residences R1 and R2 of the Hill Farm Complex have ignored the screening effects of the existing vegetation immediately surrounding the residences, showing instead the views that would be experienced if there was no vegetation around the residences. As such, the visual transects previously provided represent a conservative assessment of visual amenity impacts to R1 and R2. **Figures C** and **D** present updated visual transects from Residences R1 and R2 of the Hill Farm Complex , and which consider the existing, dense vegetation surrounding the residences and provide:

- a clear line of sight, namely that part of the view that is visible above the surrounding vegetation; and
- an obscured line of sight, namely that part of the view that is visible through the existing vegetation.

Plate 2 of the *Visual Assessment* that accompanied the EIS presents examples of the obscured views of the Project Area available from Residence R1 (“The Cottage”) and Residence R2 (“the Hill”).

In summary, neither Residence would have a clear line of sight of the Project Area, however, obscured views of up to 52m and 21m vertically of the western face of the Extraction Area would be available from Residences R1 and R2 respectively. While the existing dense vegetation between the Project and the built structures associated with *The Hill Complex* provide an additional mitigation measure, the continuation of this measure is subject to the land management imperatives of the landowner(s) of Figtree Hill, and is not within the control of Cleary Bros.

**Response to WSP Peer Review of Proposed Final Landform and Land Use**

*You are requested to provide a response to the expert advice attached to this letter*

**Response**

Cleary Bros understand the Department commissioned WSP to provide a peer review of the feasibility of the proposed final landform, with a particular focus on hydrology and hydraulic, civil design and construction aspects of the proposed bore holes(s) and pipe. Cleary Bros was provided with the peer review. Responses to each of the principal areas reviewed by WSP are provided below.

***Final landform feasibility review***

WSP noted that conceptual studies of the following were not provided.

- Alternate post-quarrying land uses.
- Alternate means of discharging water from the rehabilitated quarry.

In relation to the innovative and productive post-quarrying land uses identified by WSP, none of these instances of current land use would have been considered when extractive activities commenced at the respective sites. Similarly, numerous quarries in the Illawarra Region that were operating from the 1800's to the mid-20$^{th}$ Century are now productively used for a range of purposes, including recreation and residential. Cleary Bros contends that in all cases, the present uses were not and likely could not be identified at commencement of the development. In each case, the present land uses were achieved through recognition of community needs and commercial opportunities immediately prior to, or indeed long after, the closure of the quarries. As a result, Cleary Bros contends that a final commitment in relation the post-quarrying final land use for the Albion Park Quarry in 2053 and beyond would simply constrain future generations who may have needs different to our own.

A wide range of post-quarrying land uses options exist for the final landform, including but not limited to use as a:

- agricultural operations;
- water storage;
- festival venue;
- industrial estate;
- sporting facility;
- waste management facility;
- pumped hydroelectricity facility;
- other commercial, industrial or recreational uses; or
- future land uses which at the present time we cannot even conceive.

The Company has committed to assessing, in consultation with relevant stakeholders, all potential post-quarrying land uses during the life of the Quarry. However, any final landform or land use presented now at the development application stage must be:

- permissible without the requirement for further consent, licences or approvals;
- achievable considering available resources (material and financial); and
- capable of being safe, stable, secure and non-polluting.

In relation to potential land uses that would comply with the above criteria, Cleary Bros contend that three options exist as described above, namely

1. agricultural uses with discharge via a pipe at approximately 42m AHD;
2. water storage, with discharge via the Western Sump at approximately 76m AHD; and
3. a backfilled void with discharge via the Western Sump.

Each of these have been assessed above and the Company contends that Option 1 remains the preferred option, with Option 3 preferred if adequate backfilling material is available and an increased rate of importation is permissible at the time of quarry closure in 2053.

Importantly, none of Options 1 to 3 would preclude alternative final landform and land use options and the Company would actively assess those options throughout the life of the Quarry and would seek further development consent, approval or licences if required.

In relation to a conceptual study into alternate means of discharging water from the final landform, Cleary Bros previously considered and rejected each of the options suggested by WSP. **Table B** presents a brief overview of that assessment.

**Table B**
**Alternative Surface Water Discharge Options**

| Alternative Considered | Comment/Reason for Rejection |
|---|---|
| Channel extracted to the west to Watercourse 3 (Figure 5-9 of WSP) | • Extensive additional disturbance of Illawarra Subtropical Rainforest. In particular, the lower parts of the western facing slope adjacent to Watercourse 3 have previously been identified as having high biodiversity values<br>• Likely direct impact to one of only two known reproducing populations of the endangered tree *Daphnandra johnsonii*. |
| Channel extracted to the east to Watercourse 5 or 6 (Figure 5-10 of WSP) or south to an unnamed watercourse, | • Extensive additional disturbance of Illawarra Subtropical Rainforest.<br>• Additional visual impacts for residents to the east and south of the Project Area.<br>• The required invert point would be between 60m AHD and 70m AHD, or at least 20m higher than the proposed pipeline invert, requiring an additional approximately 1.9Mm$^3$ of fill and taking a further 38 years to import this material post-closure at 100,000tpa.<br>• A deeper cut and invert point could be considered to reduce fill volumes, however this would further increase biodiversity impacts.<br>• The unnamed watercourse to the south is not located on Cleary Bros-owned land, restricting this option as a viable alternative.<br>• An outlet to the south would also cause additional disturbance of Melaleuca armillaris Tall Shrubland, including parts of this community proposed for a biodiversity stewardship site. |

Cleary Bros anticipates that each of the recommendations provided by WSP would be included in the strategic review of rehabilitation options that would be undertaken throughout the life of the Quarry.

### *Hydrologic and hydraulic review*

WSP have misunderstood the proposed "passive discharge" arrangements proposed. In summary, Cleary Bros have committed to actively manage water within the final landform including water quality monitoring and managing discharge of water from the site. Once all relevant stakeholders agree that active management is no longer required, these measures would cease, with the only "non-standard" land management requirement being occasional maintenance of the proposed pipeline, an activity routinely undertaken by land managers including local Councils and utilities.

Cleary Bros does not accept WSP's recommendation in relation to further assessment of the option to discharge surface water to Watercourse 5 or 6 for the reasons identified in **Table B**.

### *Pipe design and construction review*

Cleary Bros agrees with WSP that the proposed pipeline structure will require ongoing maintenance and that a range of risks will be required to be managed during construction and operation of the pipeline. Cleary Bros also notes that several of WSP's assumptions around scour and maintenance relate to one particular pipeline configuration, and that detailed engineering design will be undertaken to minimise these risks.

Cleary Bros agree with WSP's recommendation in relation to undertaking further work to clarify risks, limitations and costs associated with boring of the proposed pipeline at the detailed design stage for the pipeline. However, the Company disagrees with WSP's recommendation in relation to investigation of an outlet to the southeast for the reasons identified in **Table B.**

### *Underboring feasibility review*

Cleary Bros acknowledges the information gaps and risks identified and agrees with the PSM's recommendations in relation to obtaining further data and information at the detailed design stage for the pipeline.

Yours sincerely

Mitchell Bland
Managing Director/Principal

Encls: Attachment A – Amended Final Void Pipe Outlet – Hydrological Review
Attachment B – Land Titles

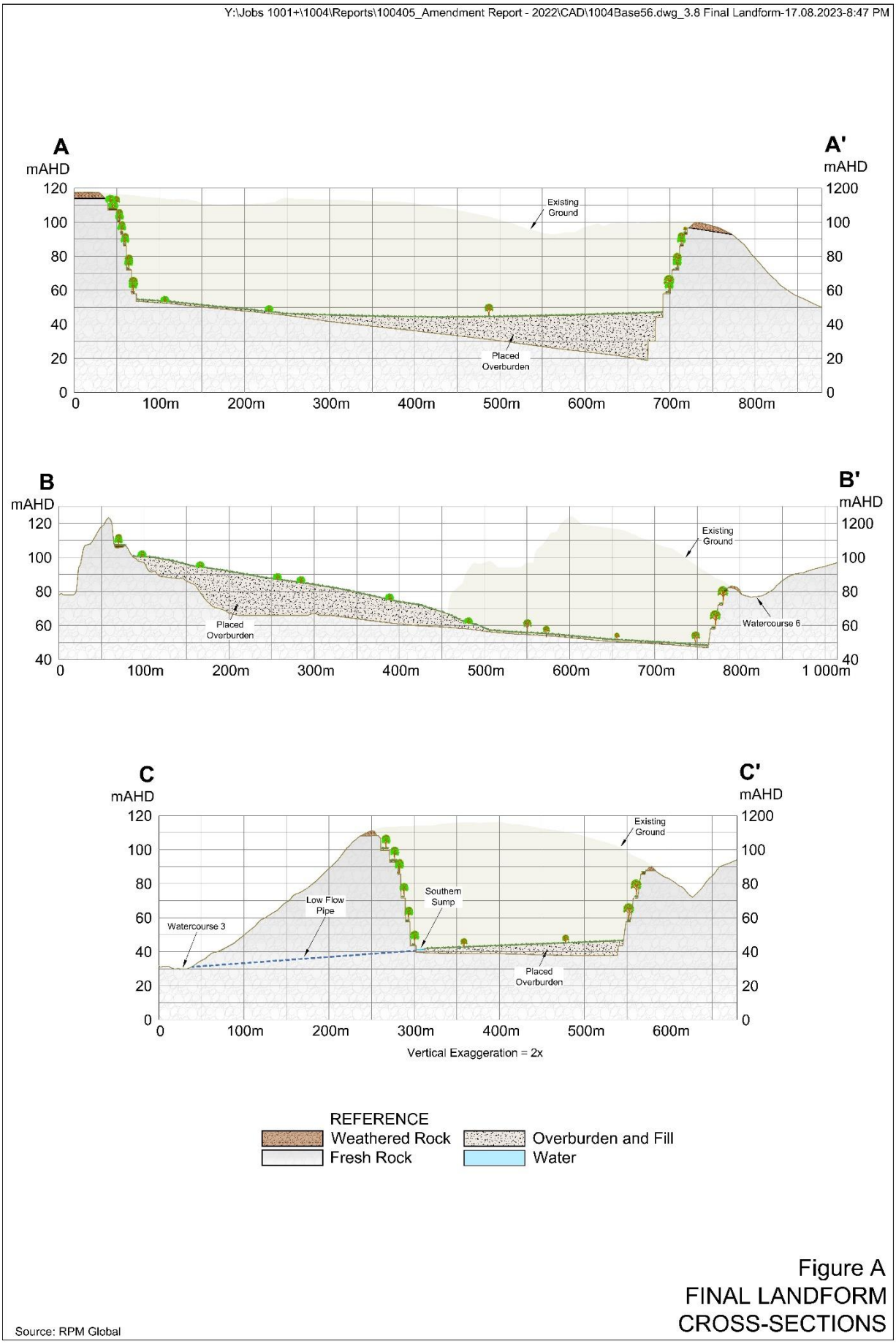
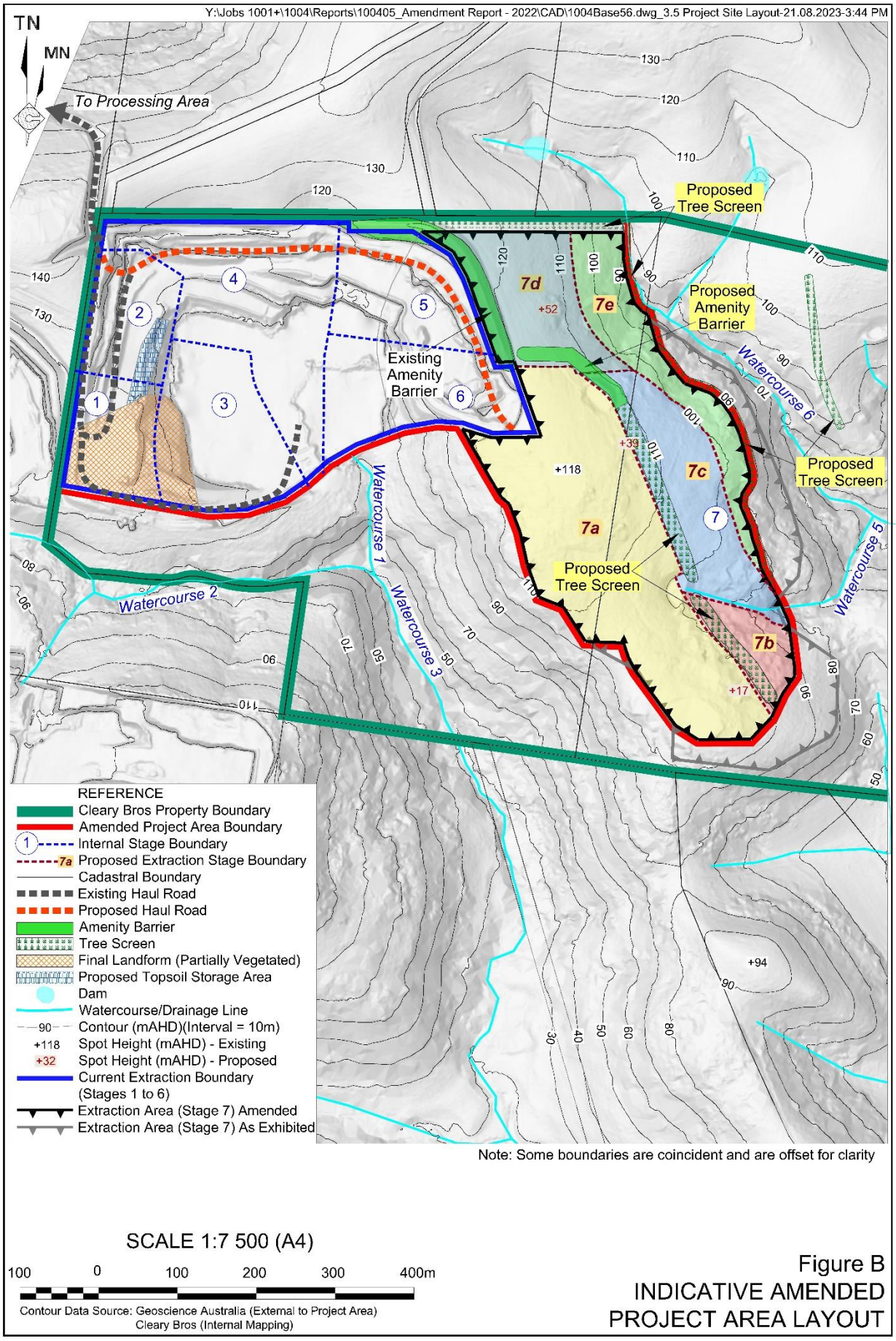



Figure A
FINAL LANDFORM
CROSS-SECTIONS

Source: RPM Global


Y:\Jobs 1001+\1004\Reports\100405_Amendment Report - 2022\CAD\1004Base56.dwg_3.5 Project Site Layout-21.08.2023-3:44 PM
TN
MN
To Processing Area
Proposed Tree Screen
Proposed Amenity Barrier
Existing Amenity Barrier
Proposed Tree Screen
Proposed Tree Screen
7a
7b
7c
7d
7e
+52
+39
+118
+17
+94
Watercourse 1
Watercourse 2
Watercourse 3
Watercourse 5
Watercourse 6
REFERENCE
Cleary Bros Property Boundary
Amended Project Area Boundary
Internal Stage Boundary
Proposed Extraction Stage Boundary
Cadastral Boundary
Existing Haul Road
Proposed Haul Road
Amenity Barrier
Tree Screen
Final Landform (Partially Vegetated)
Proposed Topsoil Storage Area
Dam
Watercourse/Drainage Line
Contour (mAHD)(Interval = 10m)
+118 Spot Height (mAHD) - Existing
+32 Spot Height (mAHD) - Proposed
Current Extraction Boundary (Stages 1 to 6)
Extraction Area (Stage 7) Amended
Extraction Area (Stage 7) As Exhibited
Note: Some boundaries are coincident and are offset for clarity
SCALE 1:7 500 (A4)
100 0 100 200 300 400m
Contour Data Source: Geoscience Australia (External to Project Area)
Cleary Bros (Internal Mapping)
Figure B
INDICATIVE AMENDED PROJECT AREA LAYOUT

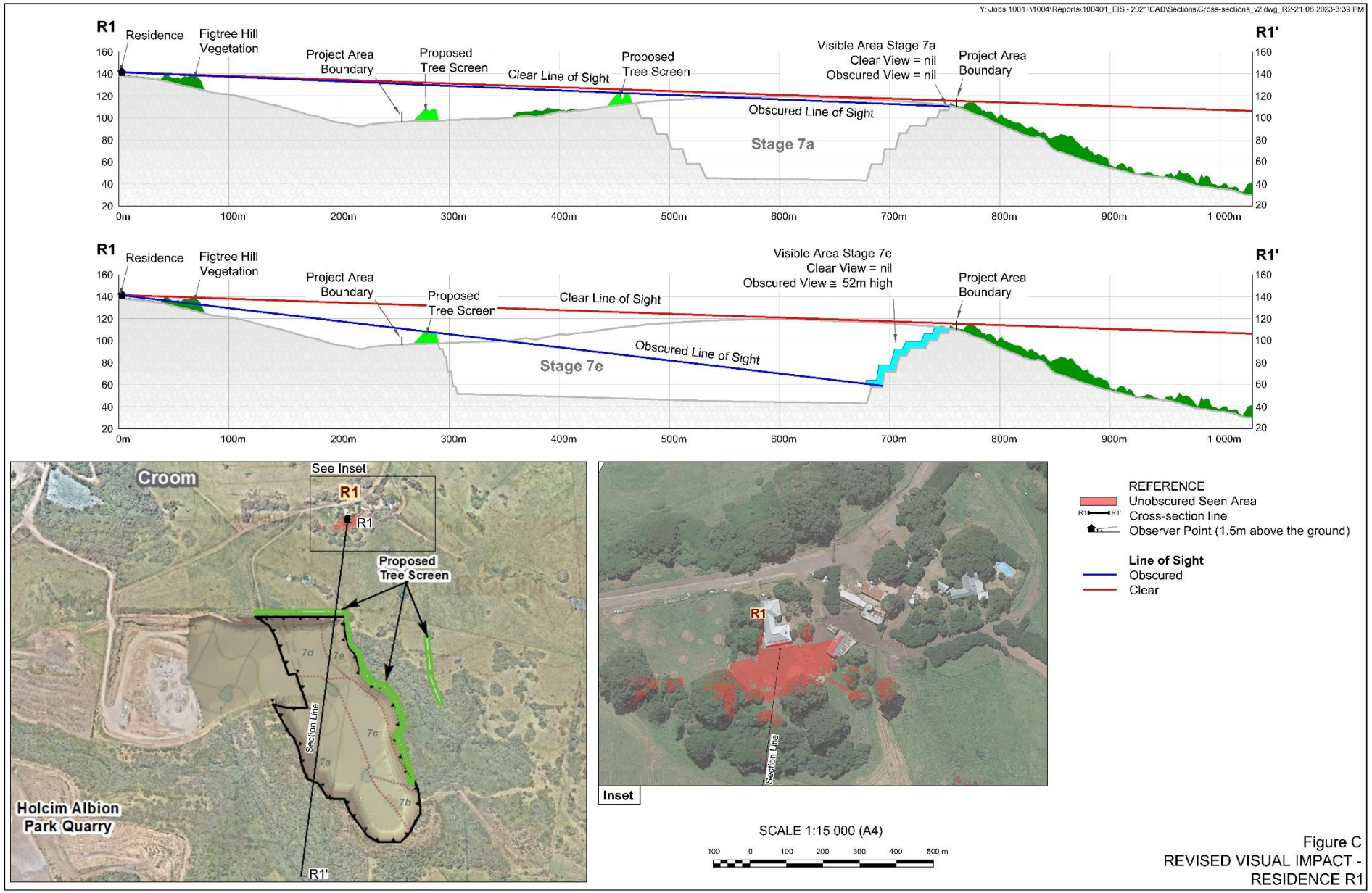



Figure C
REVISED VISUAL IMPACT - RESIDENCE R1

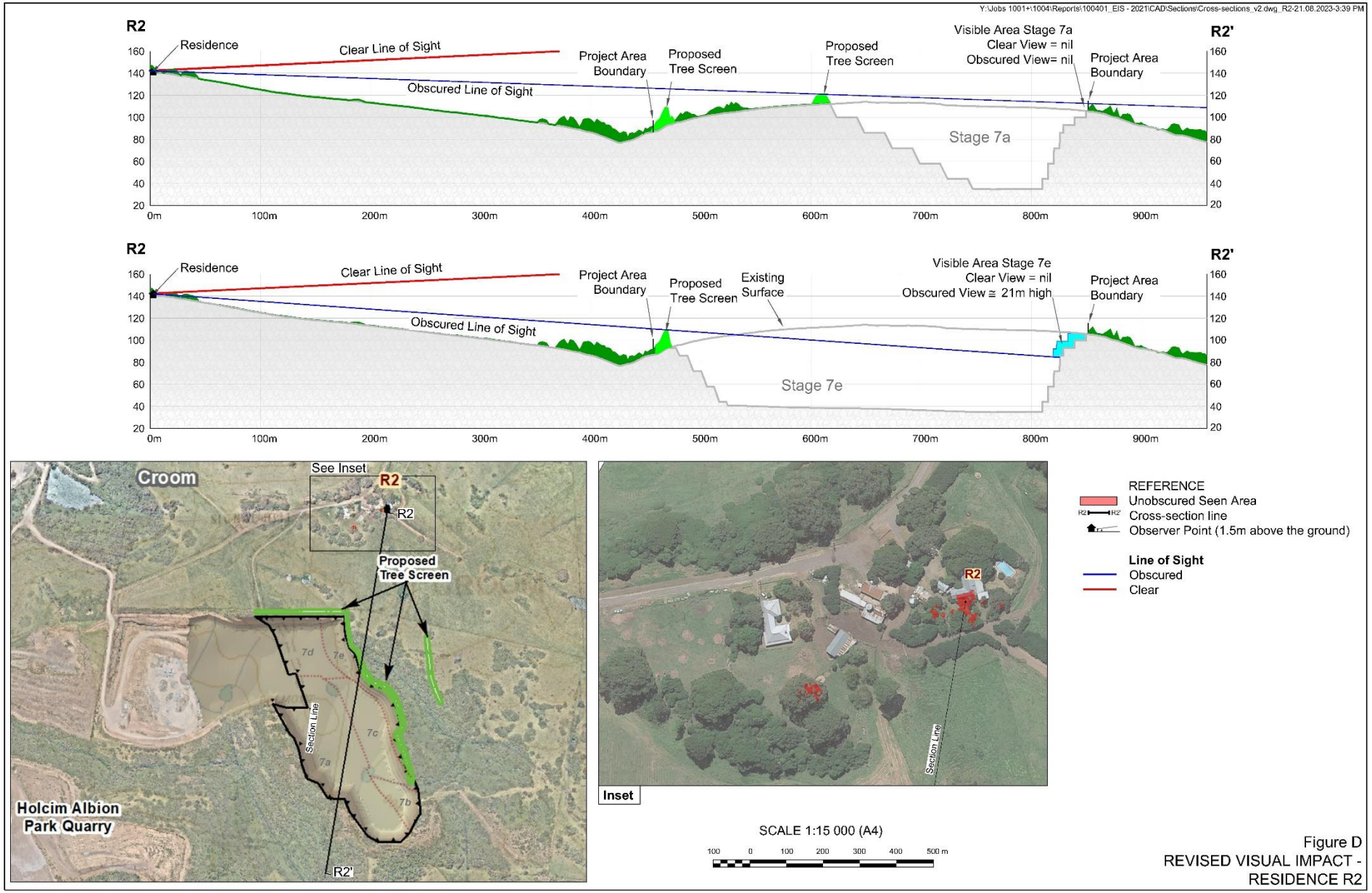



Figure D
REVISED VISUAL IMPACT - RESIDENCE R2

15 September 2023

# Attachment A

# Final Void Pipe Outlet – Hydrological Review

prepared by

Strategic Environmental and Engineering Consulting (SEEC)

(Total No. of pages including blank pages = 25)

Mitchell Bland
Principal / Managing Director
RWCorkery & Co
Via email: Mitchell@rwcorkery.com
& markhammond@clearybros.com.au

STRATEGIC ENVIRONMENTAL AND ENGINEERING CONSULTING

www.seec.com.au

our reference: 19000260-L-01-20230824
your reference:

24 August 2023

Dear Mitchell,

## FINAL VOID PIPE OUTLET – HYDROLOGICAL REVIEW (RFI#2 and RFI#8)

### Background

SEEC has been commissioned by Cleary Bros (via RW Corkery & Co) to undertake a hydrological review of a proposed pipe outlet from the final void at the Albion Park Quarry Extension – Stage 7. The response will be used to respond to two Requests For Additional Information (RFI#2 and RFI#8) from the NSW Department of Planning and Environment.

The services undertaken by SEEC in connection with preparing this review were limited to those specifically detailed in this report and are subject to the scope limitations set out in this report. SEEC otherwise disclaims responsibility to any person or entity other than Cleary Bros arising in connection with this report. SEEC also excludes implied warranties and conditions, to the extent legally permissible.

The opinions, conclusions and any recommendations in this report are based on assumptions made by SEEC described in this report. SEEC disclaims liability arising from any of the assumptions being incorrect. SEEC has prepared this report on the basis of information provided by others who provided information to Cleary Bros and SEEC, which SEEC has not independently verified or checked beyond the agreed scope of work. SEEC does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

It is anticipated at the end of the proposed Stage 7 of the quarry life, that a final void will be formed. The void is expected to be at least 80-90m deep relative to an overflow location, therefore the void will trap rainfall/runoff. In order to prevent the void ponding water, it is proposed to undertake earthworks and fill a portion of the void to create a low spot centrally located in the western section of Stage 7. A pipe will be bored with a slight downslope from the void to an adjacent creek (Watercourse 3) providing a free draining outlet. The Department of Planning and Environment is seeking additional details on the proposal to better understand how the pipe may impact the hydrological regime.

The proposed route of the pipeline is provided in Figure 1.

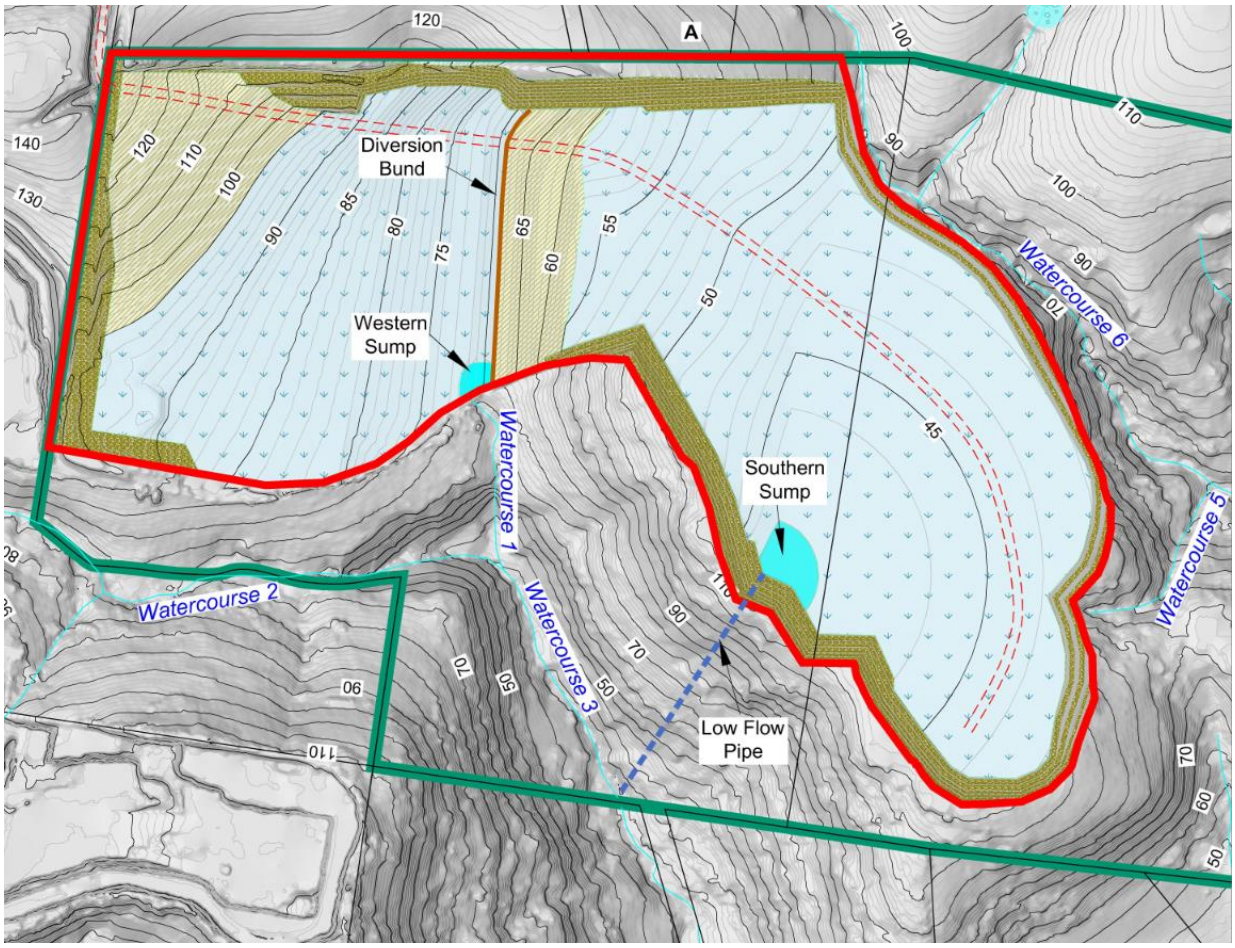



**Figure 1: Indicative Final Landform with Outlet Pipe (Source: RWCorkery & Co)**

## Hydrology

A pre and post Stage 7 hydrological DRAINS model was developed to estimate the potential impact from the proposed void and outlet pipe. The pre Stage 7 model assumed that the currently approved Stages 1 to 6 are completed and rehabilitated. That scenario is referred to hereafter as the "Post Stage 6 Only" scenario.

The DRAINS model is a rainfall/runoff storage network routing model used to model large urban or rural catchment areas and was adopted for this study. The model allows runoff parameters to be amended to simulate the impact of development (e.g. increase of impervious surfaces) and estimate the hydraulic performance of stormwater network elements such as swales, cross drainage culverts and detention basins. The RAFTS hydrological method was adopted as it allows rainfall losses to be reflective of the landuse and soil type. A description of the models and results for each of the two scenarios is provided below.

**Post Stage 6 Only**

Post Stage 6 Only was adopted as the "existing" scenario. It accounts for the currently approved quarry layout and allows for the void to be rehabilitated with grass and vegetation. It assumes that the existing topography covering the proposed Stage 7 remains unchanged.

The adopted catchment area, percent imperviousness and catchment slopes are listed in Table 1. A mannings roughness coefficient of 0.06 was adopted for all catchments. The adopted catchment for the Post Stage 6 Only phase is shown in Figure 2.

**Table 1: Post Stage 6 Only Sub-Catchment Characteristics used in Hydrology Model**

| Sub-catchment ID | Area (ha) | Percent Imperviousness (%) | Average Slope (%) |
|---|---|---|---|
| CA01 | 10.44 | 0 | 15.6 |
| CA02 | 12.78 | 0 | 14.3 |
| CA04 | 16.03 | 0 | 16.2 |
| CA06 | 3.92 | 0 | 23.1 |
| CA07 | 7.32 | 0 | 22.7 |
| CA08 | 24.78 | 0 | 30 |
| CA09 | 7.08 | 0 | 30 |
| CA10 | 26.41 | 0 | 14.7 |
| CA11 | 4.00 | 0 | 14.7 |
| CA12 | 17.30 | 0 | 21.3 |
| CA13 | 77.97 | 0 | 21.4 |
| CA14 | 48.73 | 0 | 10.5 |
| CA15 | 56.38 | 0 | 10 |
| CA16 | 11.84 | 0 | 3 |
| **Total Area** | **324.96** | | |

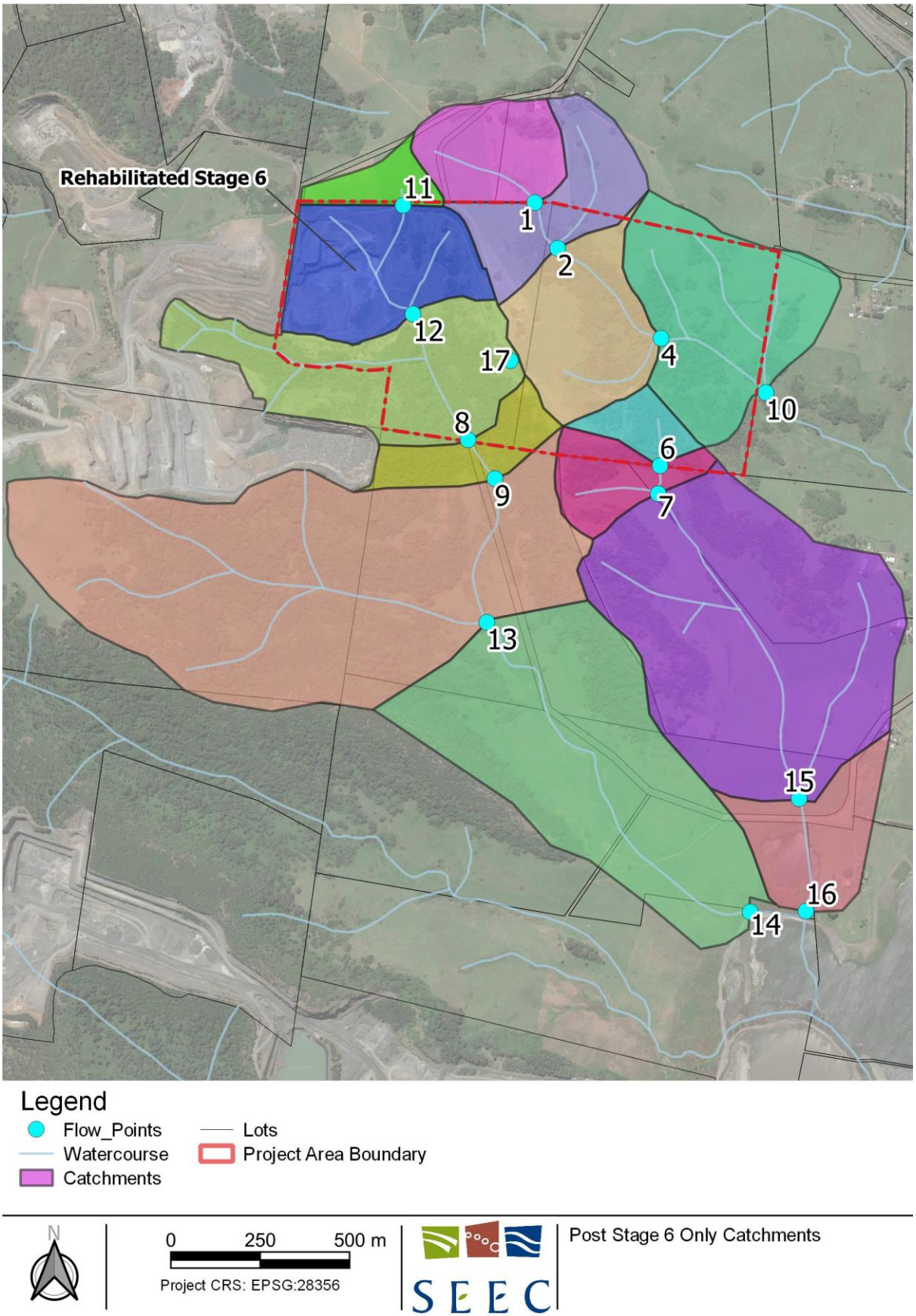



**Figure 2: Post Stage 6 Only catchment areas and flow locations**

The DRAINS model schematics for this scenario is shown below in Figure 3.

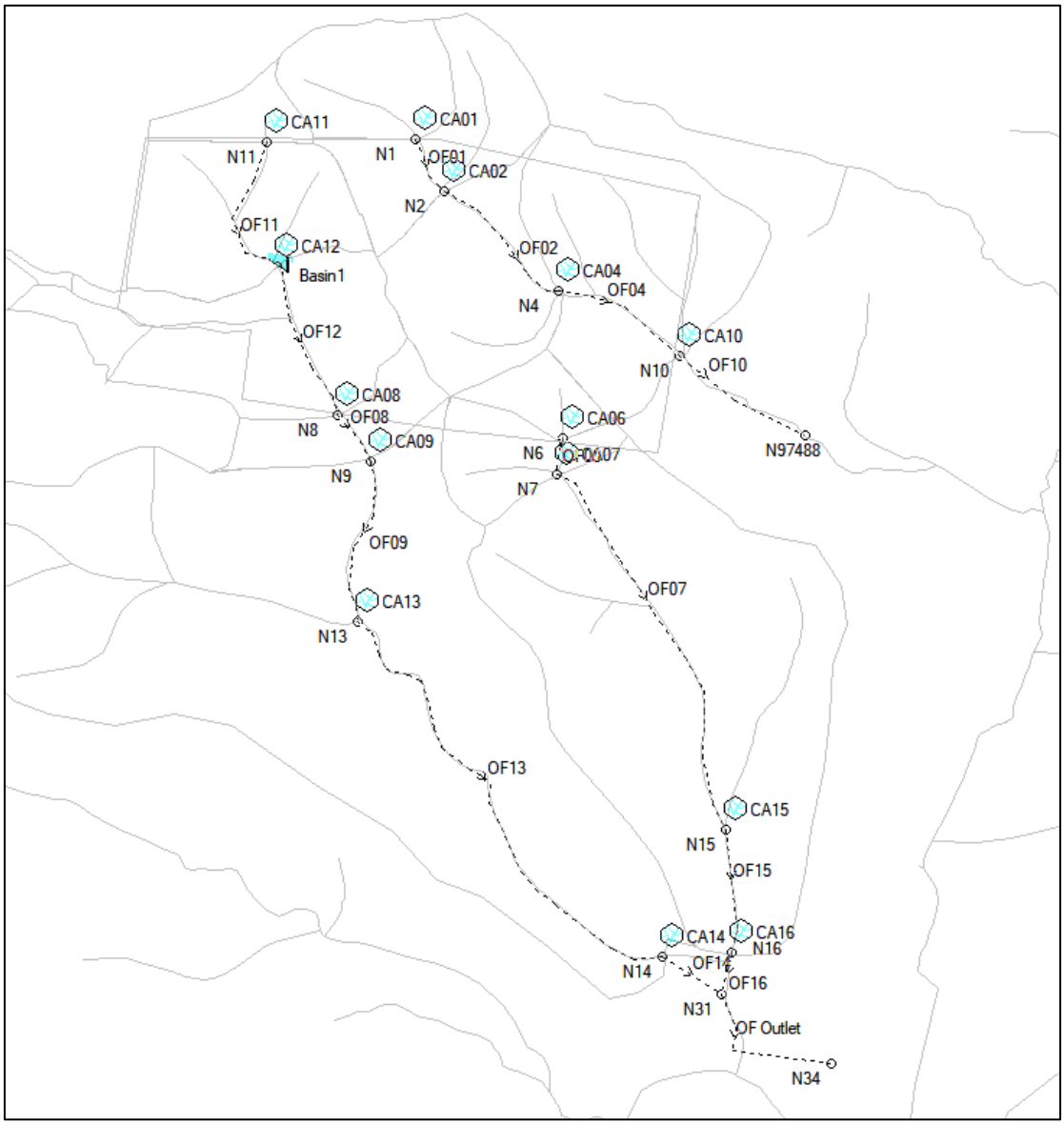



**Figure 3: Post Stage 6 Only DRAINS model schematic**

The model extends south to the former Boral Dunmore sand dredging operation that is now under rehabilitation (downstream of catchments 14 and 16). Peak flow and hydrographs were extracted from the model at the locations shown in Figure 2.

The DRAINS model adopted the following parameters:

- Impervious area Initial Loss (mm) = 0
- Impervious area Continuing Loss (mm) = 0
- Pervious area Initial Loss (mm) = 25.0
- Pervious area Continuing Loss (mm) = 2.5
- Australian Rainfall and Runoff 2019 rainfall depths and temporal patterns

No calibration was completed for the runoff parameters as there is no stream gauges in the catchments. The losses are in line or lower than those recommended by the Australian Rainfall and Runoff Data Hub.

**Post Stage 7**

The DRAINS model was updated for the Post Stage 7 scenario and includes the proposed Stage 7 quarry extension which would be rehabilitated with grass and vegetation. A basin has been included in the new void with a "wet" storage volume of 5,730m$^3$. This is based on the Blue Book sizing for a 5-day 85%ile rainfall Type D sediment basin. A pipe outlet was located above this volume with additional storage extending a further 4m vertically above the pipe inlet to a surface area of 41,000m$^2$. The basin was assumed to be full at the start of the model run.

A number of pipe diameters were analyzed to drain the void and a 300mm diameter pipe was selected. Further discussion is provided on page 19. An additional pipe may also be adopted to provide added redundancy. A 300mm diameter pipe has a cross sectional area of 0.071m$^2$. Twin 300mm diameter pipes have an area of 0.14m$^2$ which is similar to a 450mm diameter pipe area of 0.16m$^2$. Any results for a 450mm diameter pipe can be used to assess the potential impact of adopting twin 300mm diameter pipes. The model assumed that pipes had no blockage.

The adopted catchment characteristics are listed in Table 2.

**Table 2: Post Stage 7 Sub-Catchment Characteristics used in Hydrology Model**

| Sub-catchment ID | Area (ha) | Percent Imperviousness (%) | Average Slope (%) |
|---|---|---|---|
| CA01 | 10.44 | 0 | 15.6 |
| CA02 | 8.23 | 0 | 14.3 |
| CA04 | 7.56 | 0 | 16.2 |
| CA06 | 3.38 | 0 | 23.1 |
| CA07 | 7.08 | 0 | 22.7 |
| CA08 | 23.40 | 0 | 30 |
| CA09 | 6.73 | 0 | 30 |
| CA10 | 24.96 | 0 | 14.7 |
| CA11 | 4.00 | 0 | 14.7 |
| CA12 | 13.20 | 0 | 21.3 |
| CA13 | 77.97 | 0 | 21.4 |
| CA14 | 48.73 | 0 | 10.5 |
| CA15 | 56.38 | 0 | 10 |
| CA16 | 11.84 | 0 | 3 |
| CA17 | 19.81 | 0 | 5 |
| **Total Area** | **323.70** | | |

The adopted catchment for the Post Stage 7 phase is shown in Figure 4.

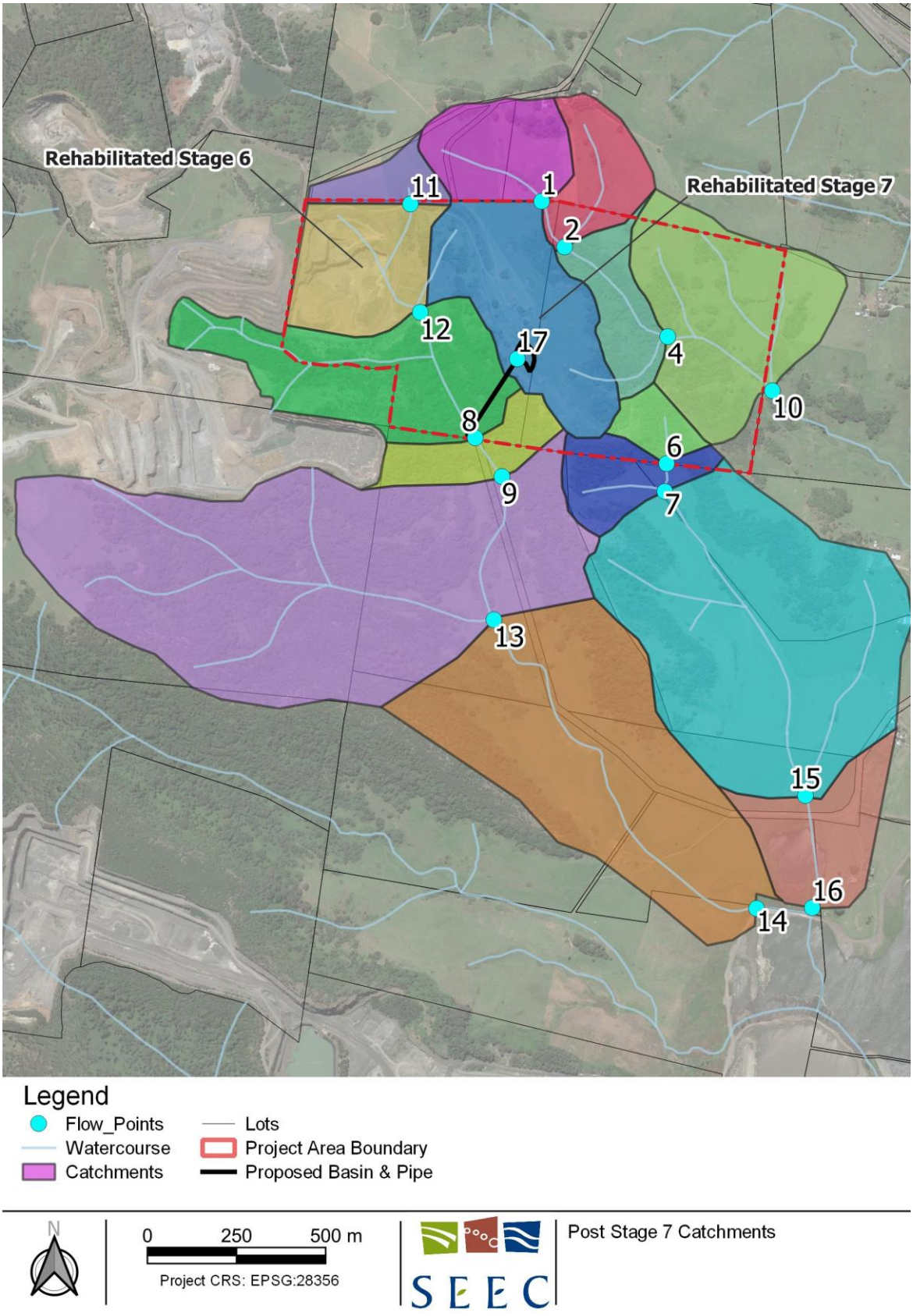



**Figure 4: Post Stage 7 catchment areas and flow locations**

The DRAINS model schematics for this scenario is shown below.

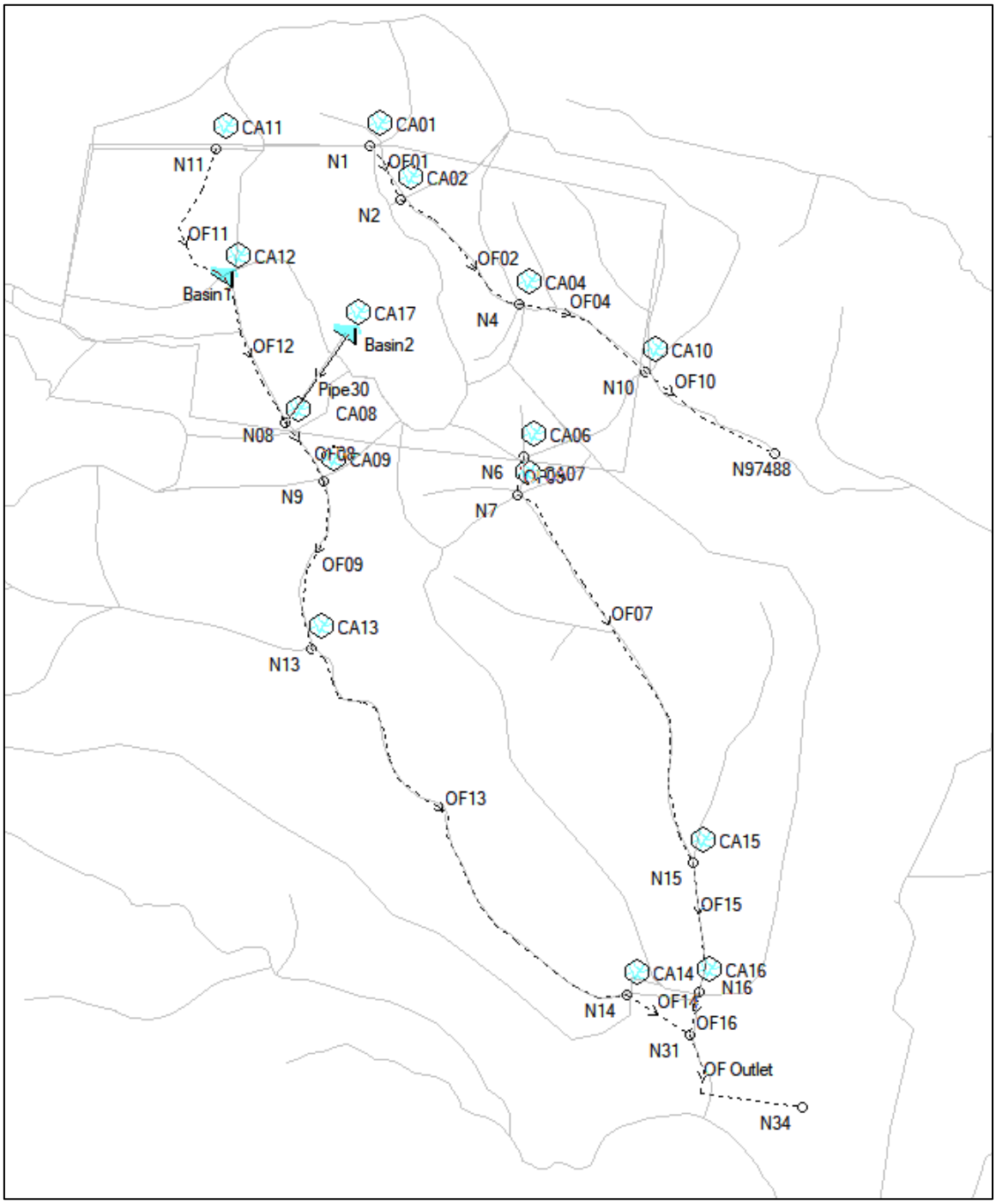



**Figure 5: Post Stage 7 DRAINS model schematic**

The same DRAINS model losses were adopted for this scenario.

**Results**

Results were extracted for the 1% Annual Exceedance Probability (AEP) event, the 10% AEP and the 1 Event per Year (EY) for the Post Stage 6 Only scenario and the Post Stage 7 scenario at 4 key locations listed below and shown in Figure 6.

- Discharge Location 1 - Downstream of catchment 10 (Eastern discharge point)
- Discharge Location 2 - Downstream of catchment 12 (upstream of the pipe discharge from the Stage 7 void)
- Discharge Location 3 - Downstream of catchment 8 (downstream of the pipe discharge from the Stage 7 void)
- Discharge Location 4 - Downstream of catchments 14 and 16 (discharge to Boral)

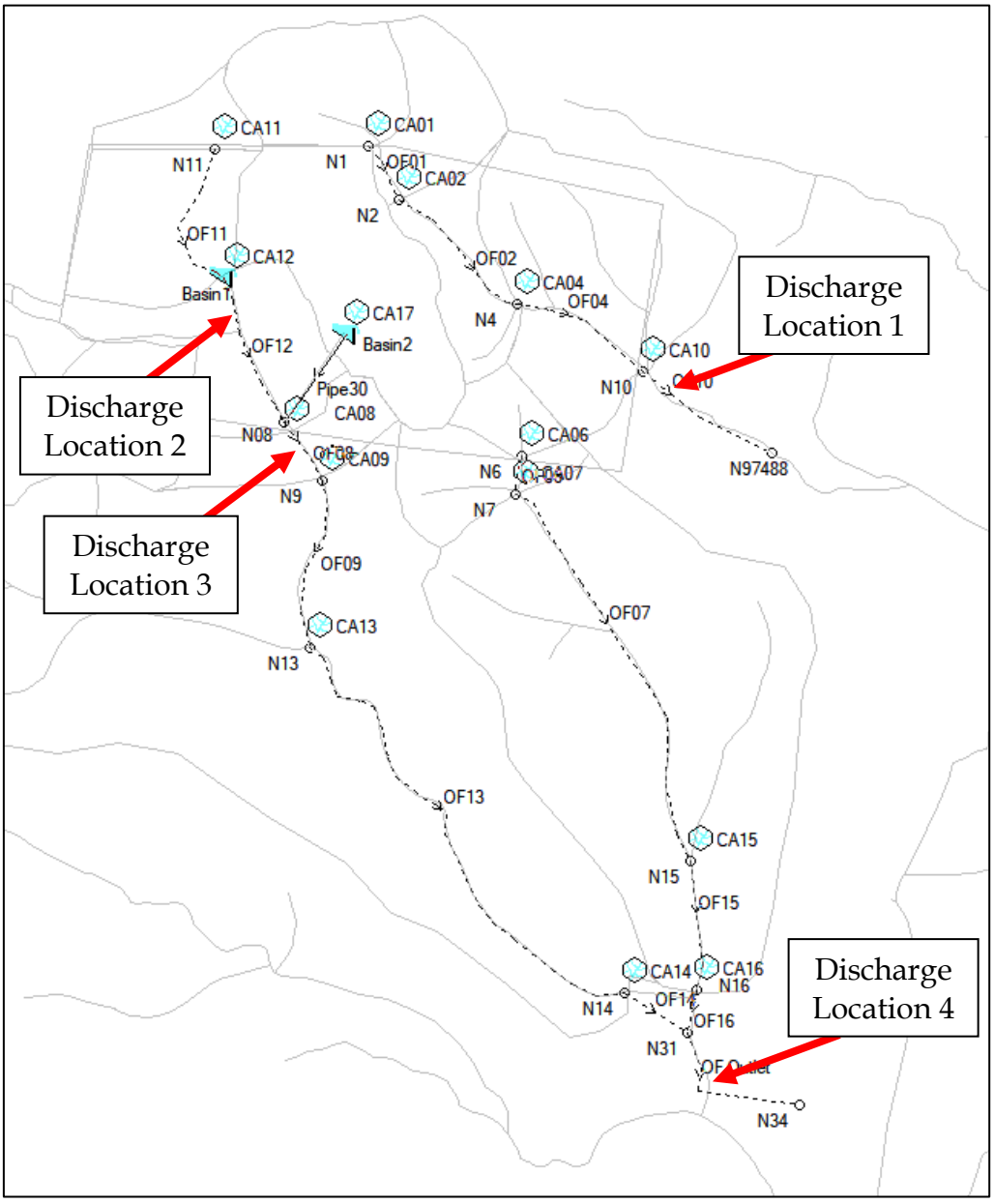



**Figure 6: Location of results**

### 1% AEP Storm

The hydrographs at these locations for the critical events are provided below. The Post Stage 7 results assume a 300mm diameter outlet pipe from the void.

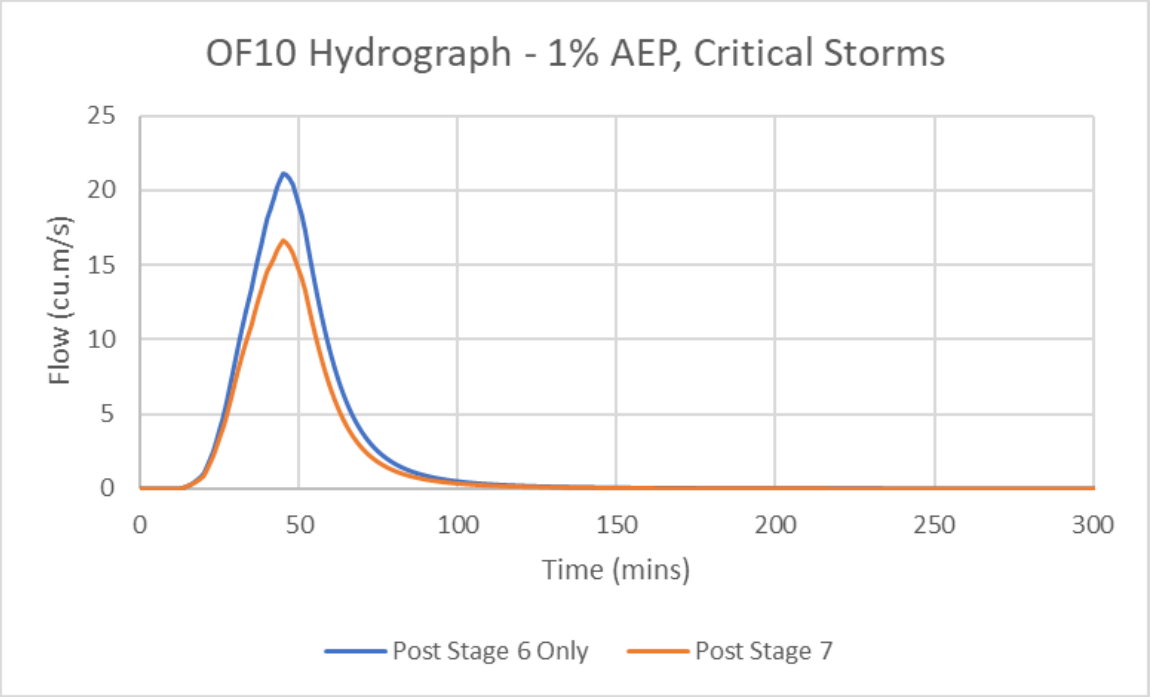



**Figure 7: Flow hydrograph at Discharge Location 1 downstream of catchment 10 – 1% AEP**

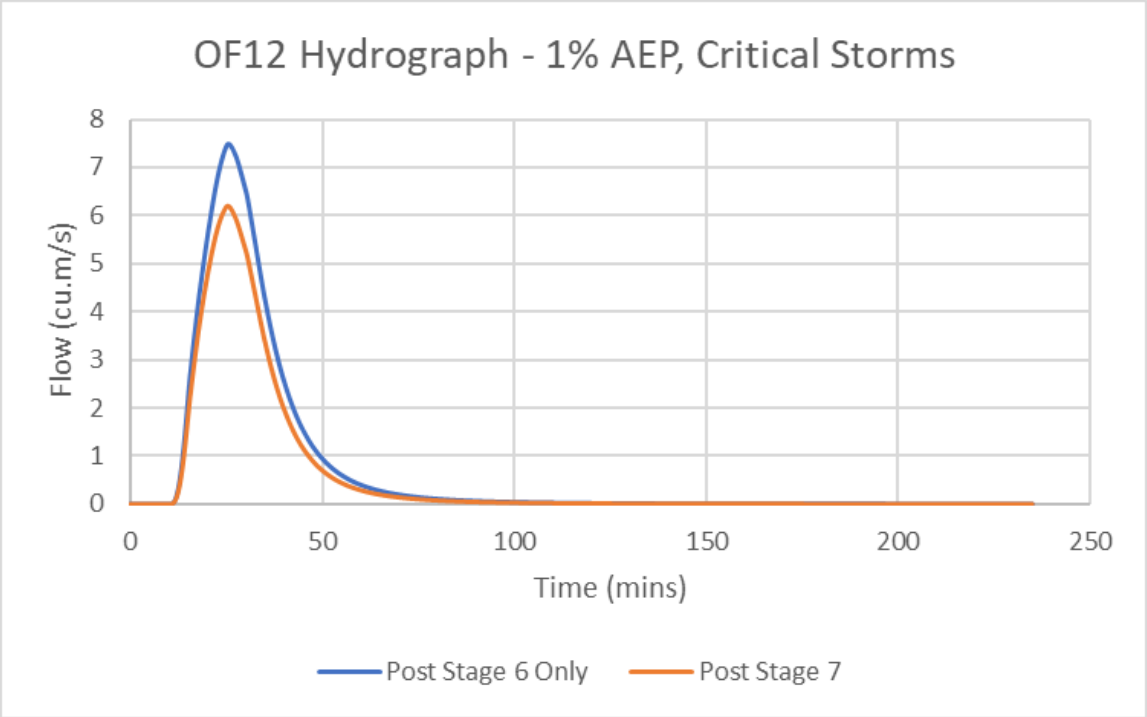



**Figure 8: Flow hydrograph at Discharge Location 2 downstream of catchment 12 – 1% AEP**

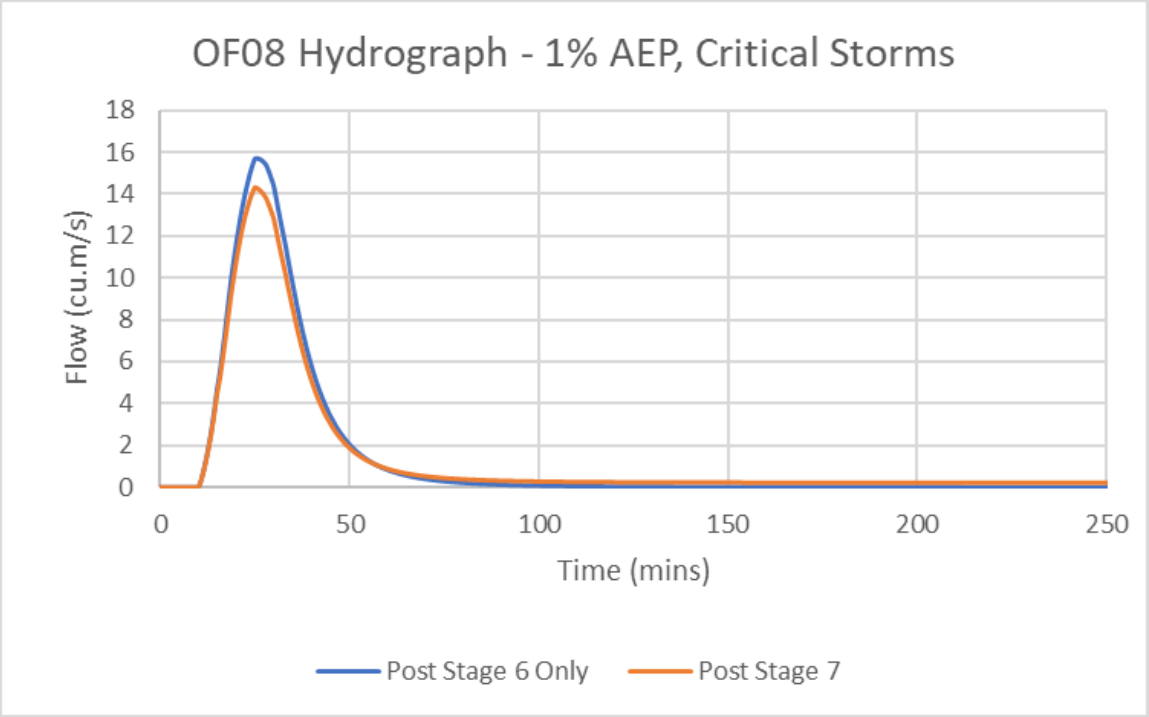



**Figure 9: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1% AEP**

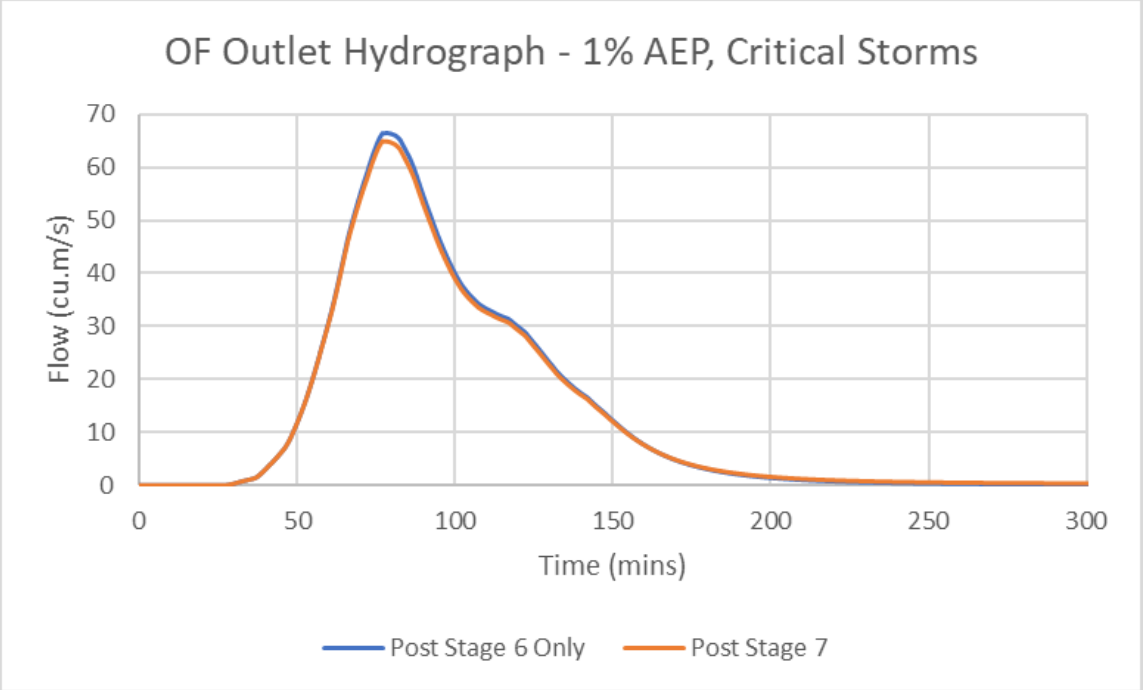



**Figure 10: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 1% AEP**

The graphs highlight that the Stage 7 void and 300mm diameter outlet pipe result in a decrease in the peak flow of around 2m$^3$/s in the downstream waterways. This is reduced to around 1.5m$^3$/s out the outlet (downstream of catchment 14 and 16). The flow time at OF08 below the proposed pipe outlet is extended waiting for the void to

drain by around 900 minutes (15 hours) however the receding limb of the hydrograph (tail flow) is only around 0.2m³/s higher than the Post Stage 6 only scenario.

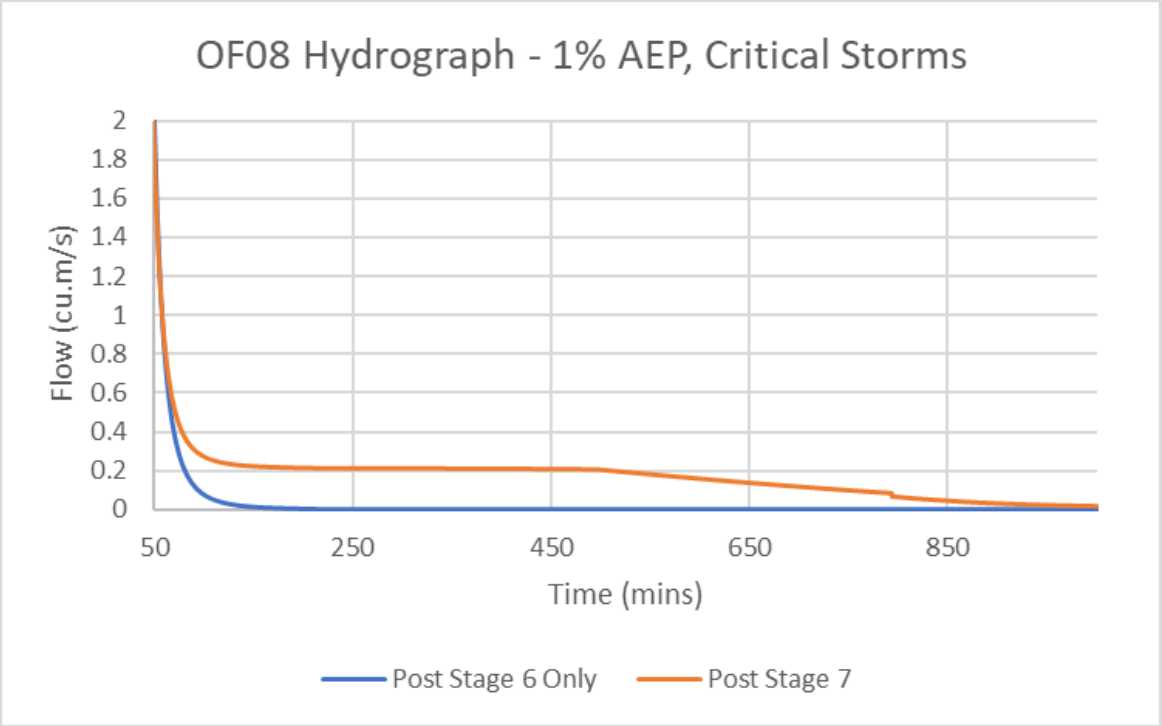



**Figure 11: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1% AEP**

This is repeated just upstream of Boral (outlet) where the flow is extended for approximately 1400 minutes (23.3 hours) with the increase in tail flow rate also around 0.2m³/s.

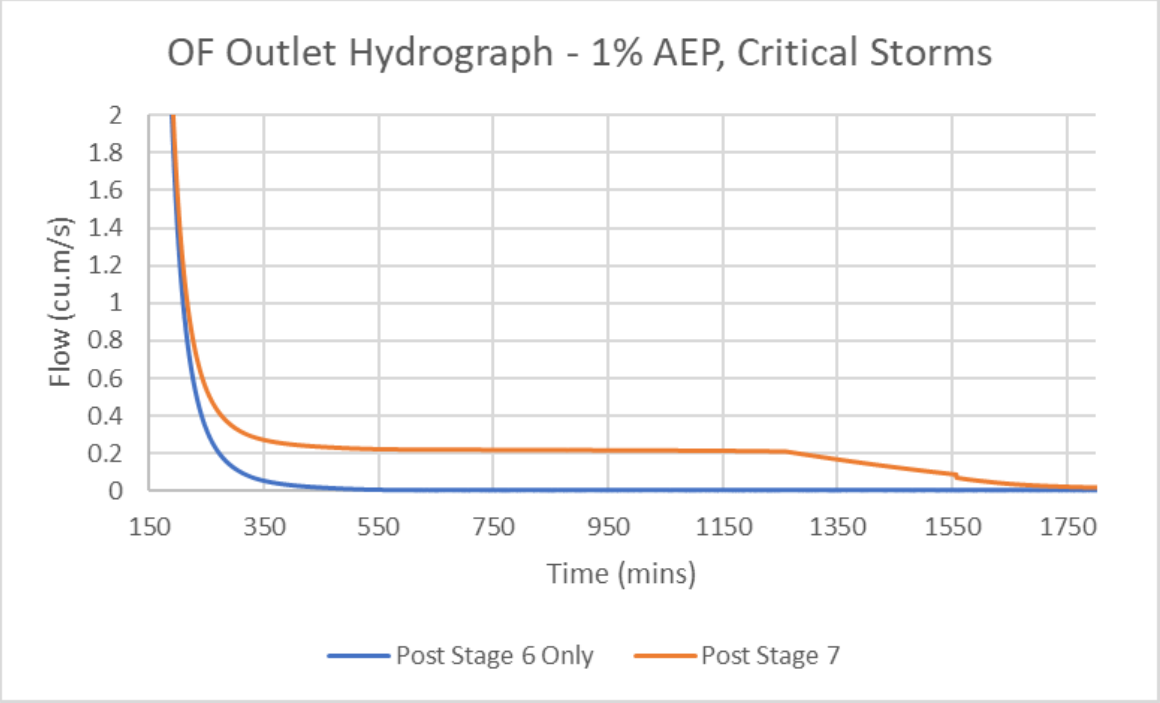



**Figure 12: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 1% AEP**

### 10% AEP Storm

The hydrographs at the key locations for the critical events are provided below. The Post Stage 7 results assume a 300mm diameter outlet pipe from the void.

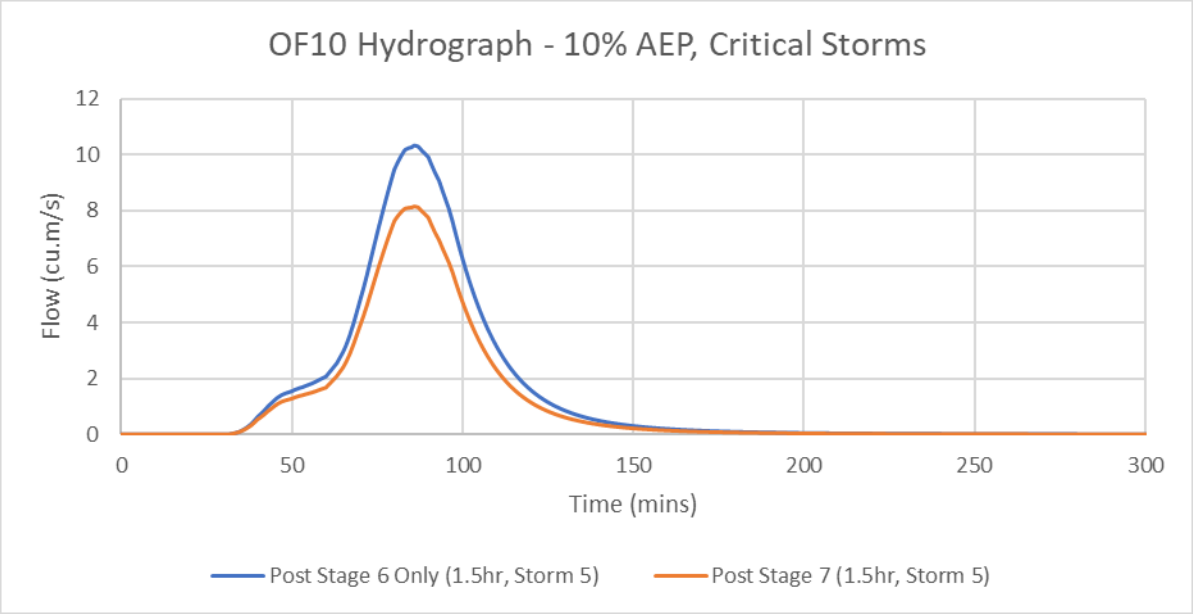



**Figure 13: Flow hydrograph at Discharge Location 1 downstream of catchment 10 – 10% AEP**

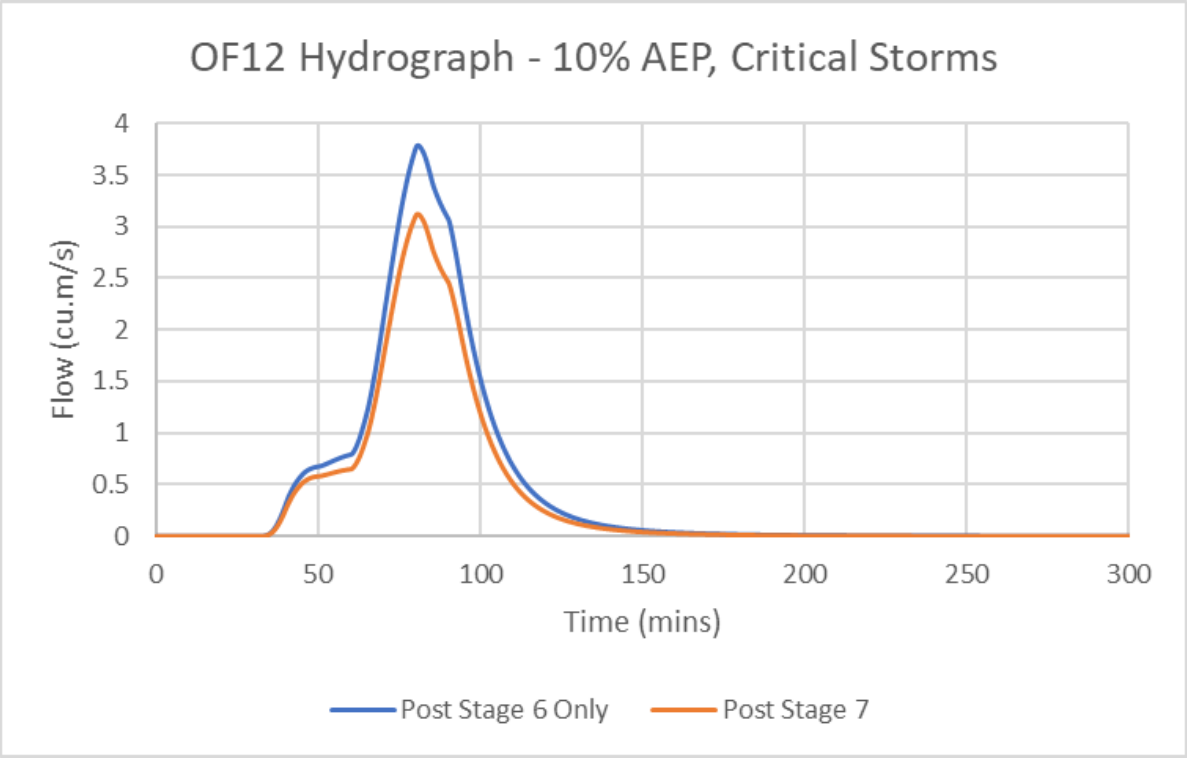



**Figure 14: Flow hydrograph at Discharge Location 2 downstream of catchment 12 – 10% AEP**

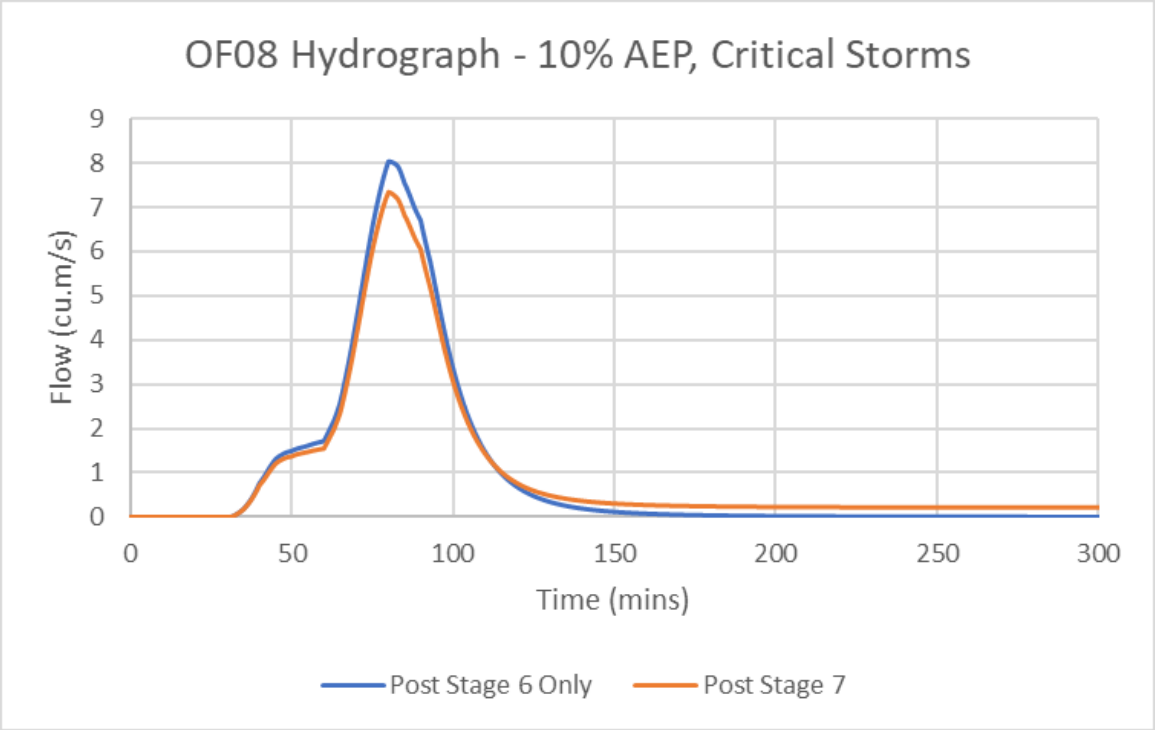



**Figure 15: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 10% AEP**

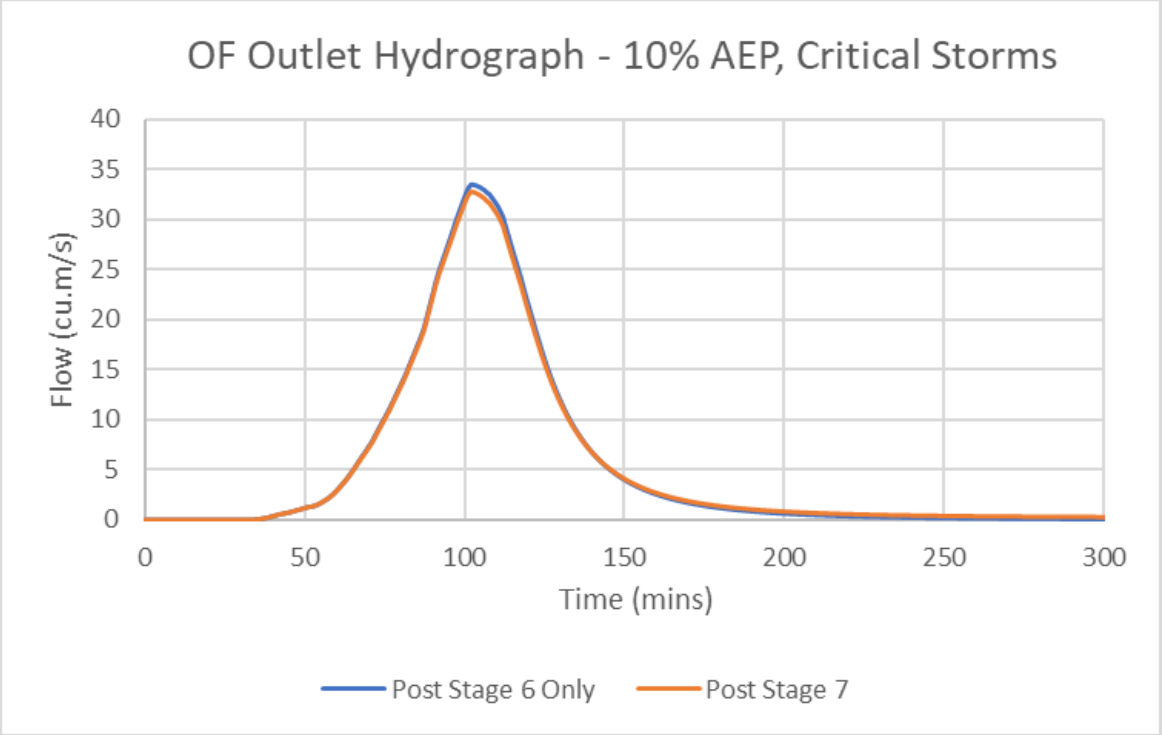



**Figure 16: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 10% AEP**

The graphs highlight that the Stage 7 void and 300mm diameter outlet pipe result in a decrease of around 0.7m³/s in the downstream waterways. The flow time is extended similarly to the 1% AEP as the void empties.

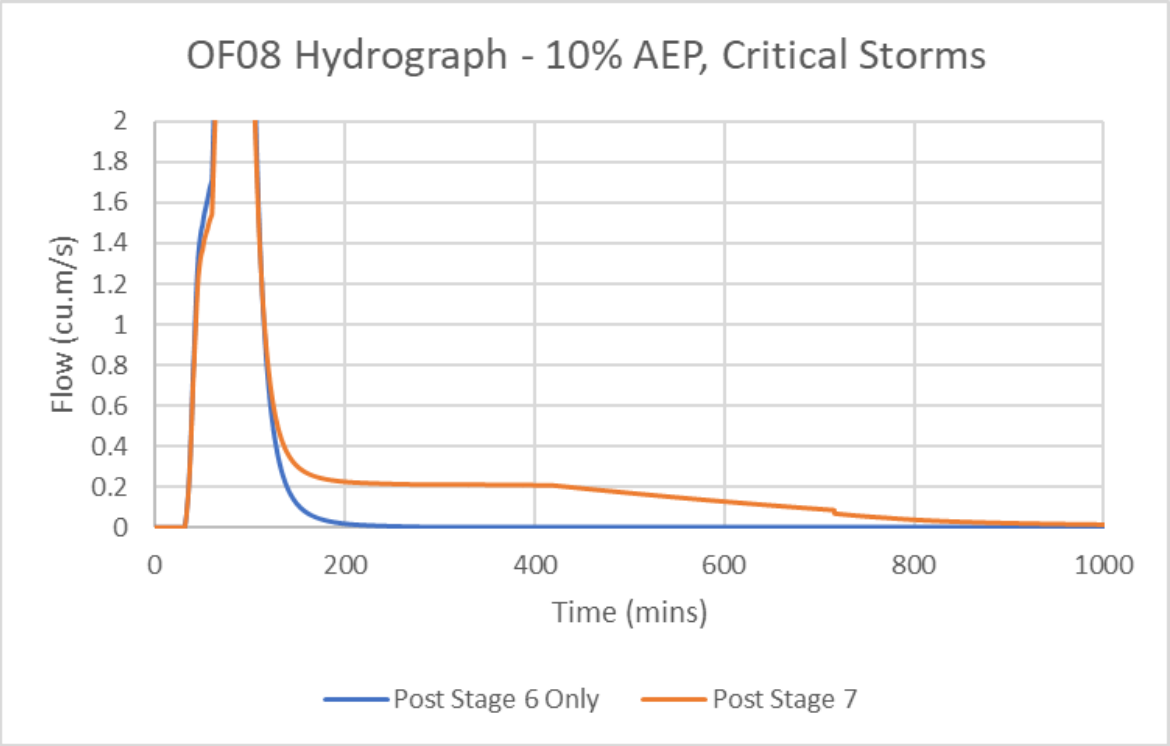



**Figure 17: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 10% AEP**

This is repeated at Boral (outlet) where the flow is similarly extended for approximately 700 minutes (11.7 hours).

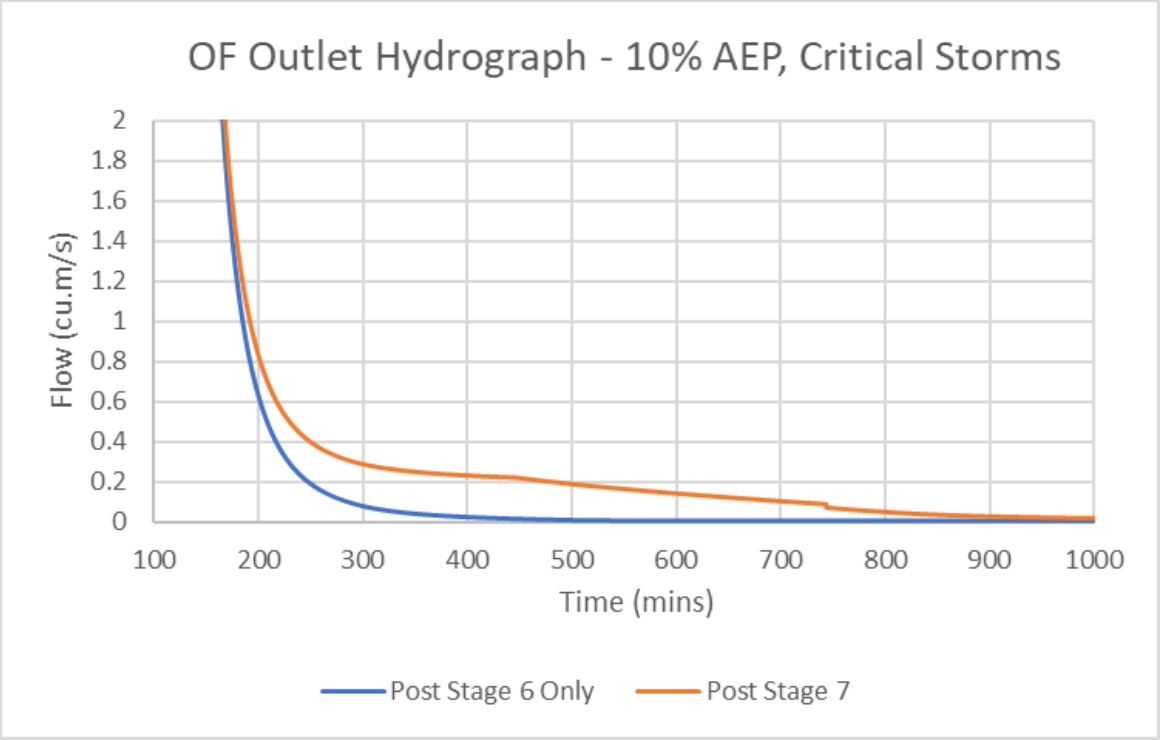



**Figure 18: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 10% AEP**

### 1 EY Storm

The hydrographs at the key locations for the critical events are similar for the 1 EY as provided below. The Post Stage 7 results assume a 300mm diameter outlet pipe from the void.

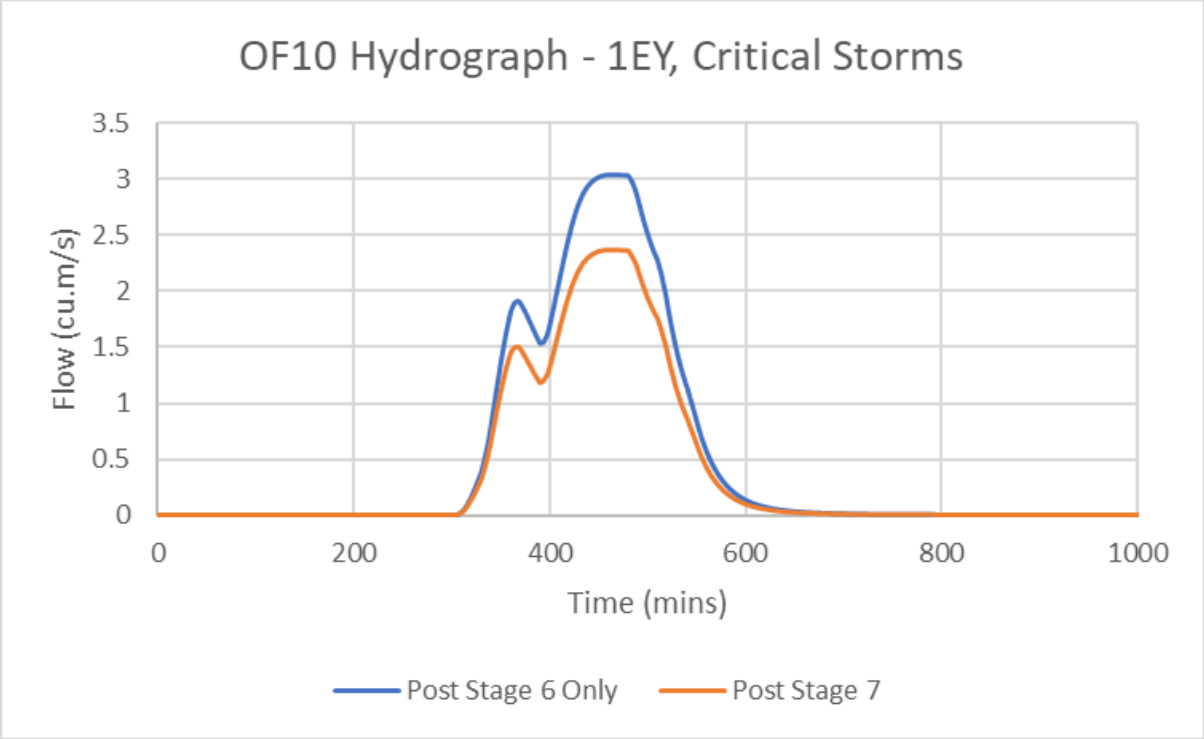



**Figure 19: Flow hydrograph at Discharge Location 1 downstream of catchment 10 – 1 EY**

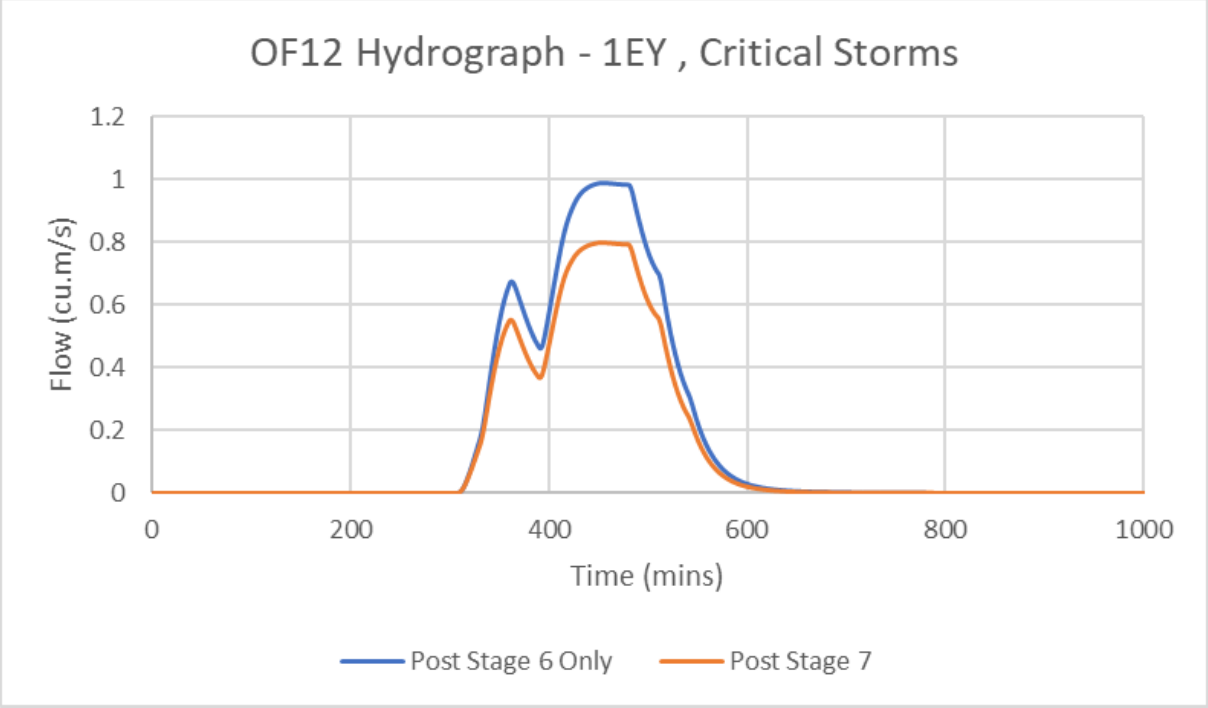



**Figure 20: Flow hydrograph at Discharge Location 2 downstream of catchment 12 – 1 EY**

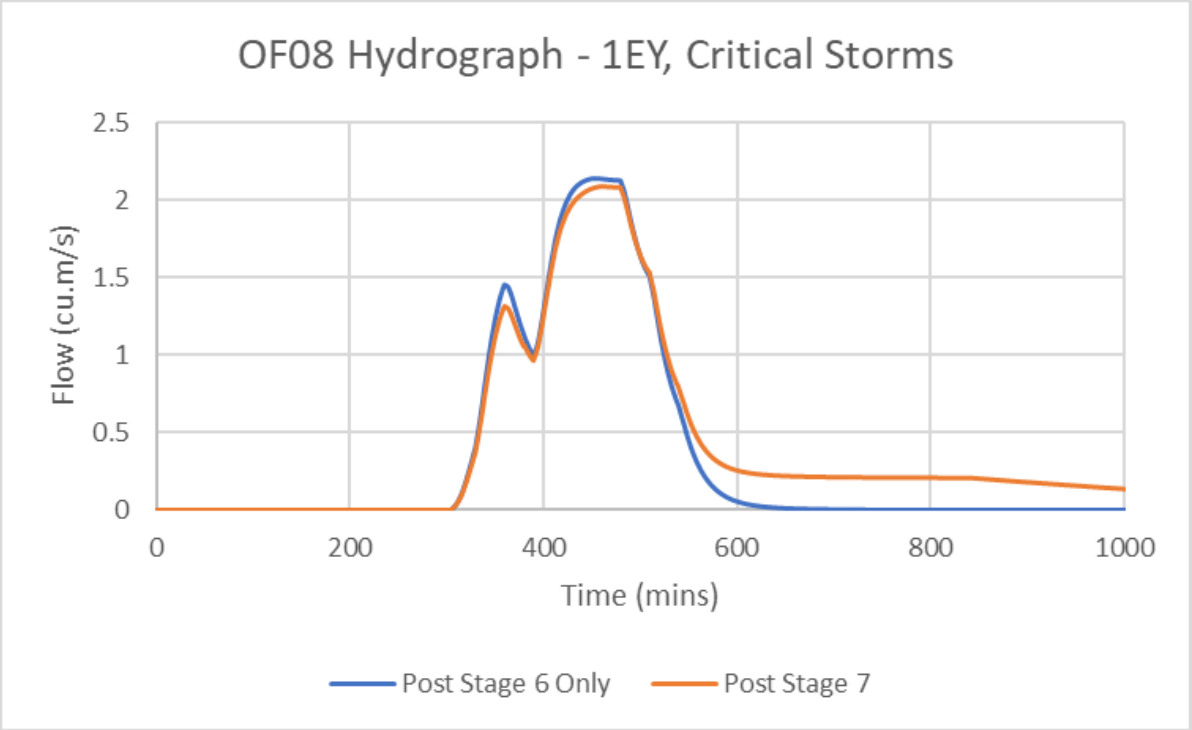



**Figure 21: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1 EY**

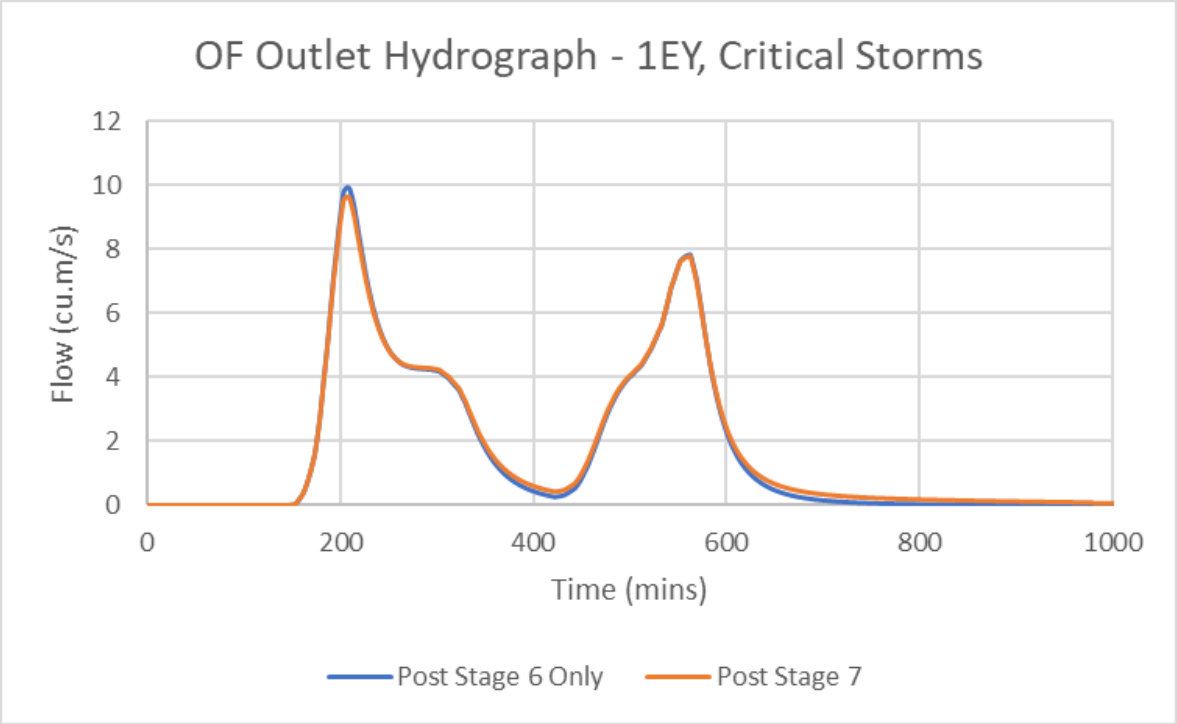



**Figure 22: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 1 EY**

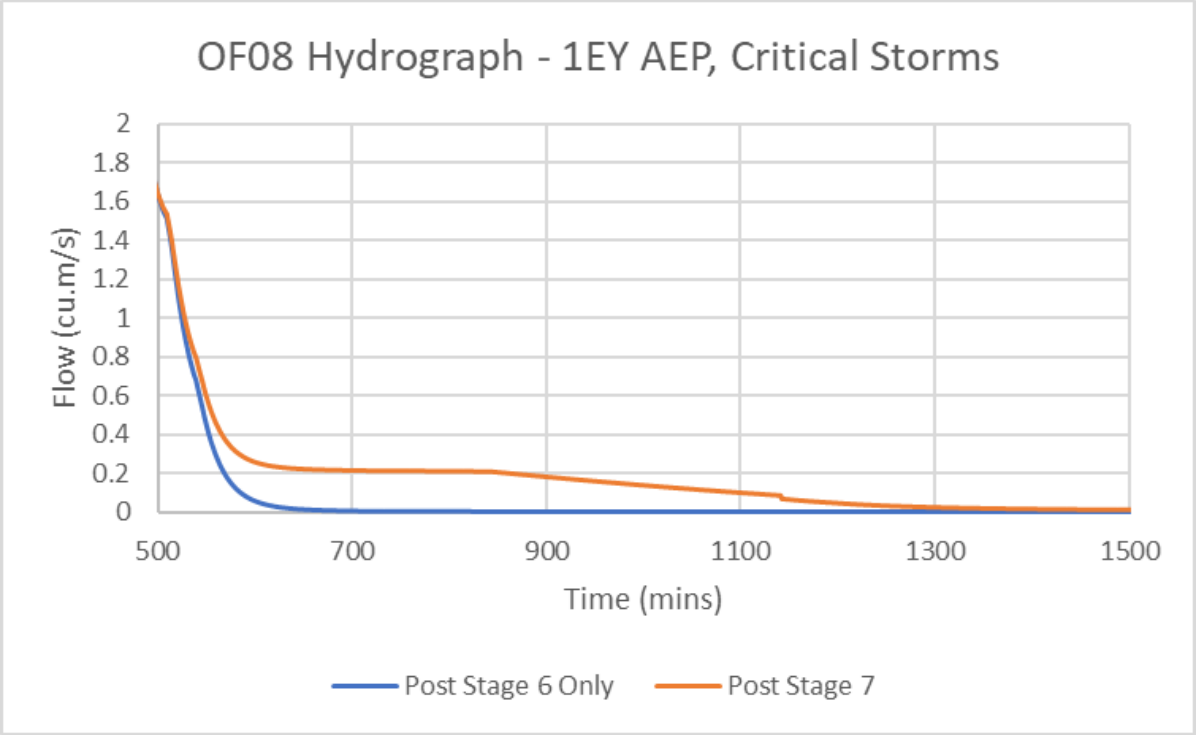



**Figure 23: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1 EY**

The graphs highlight that the Stage 7 void and 300mm diameter outlet pipe result in a decrease in the peak flow of around 0.2m$^3$/s in the downstream waterways. The flow time is extended waiting for the basin to empty similarly to the 1% and 10% AEP.

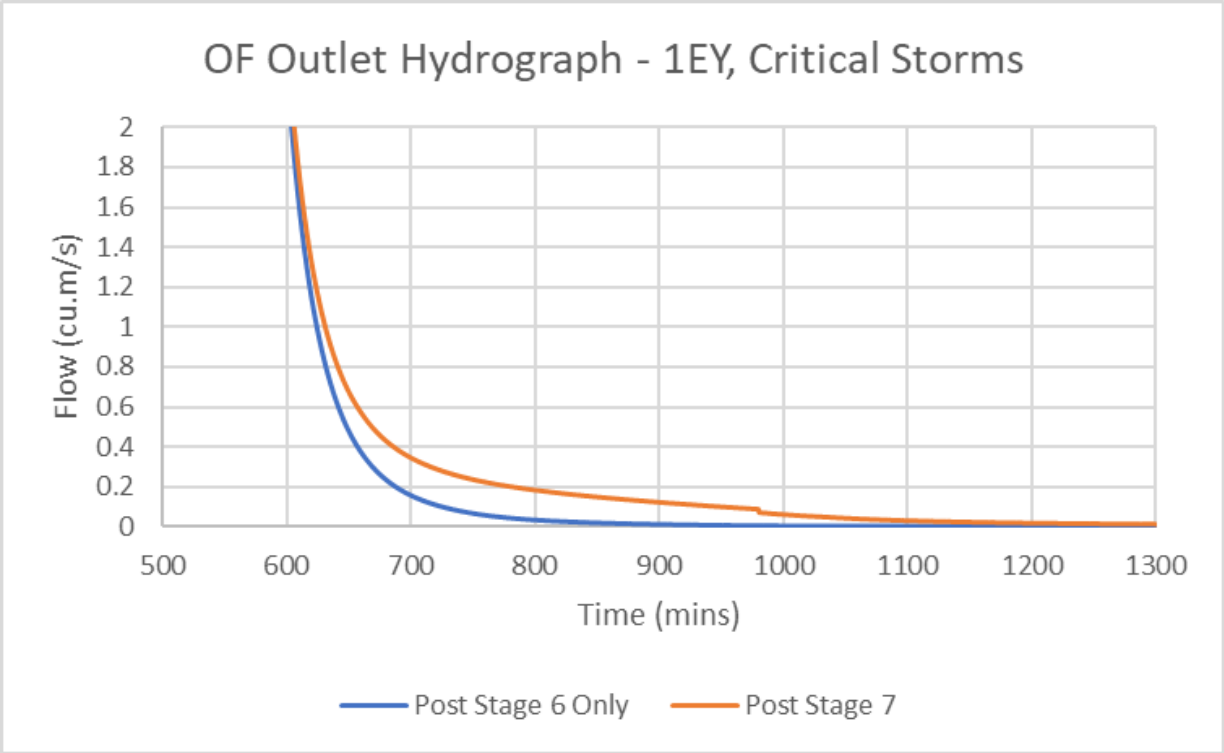



**Figure 24: Flow hydrograph at Discharge Location 4 downstream of catchment 14 and 16 – 1 EY**

## Void Outlet Pipes

As discussed on page 6, several outlet pipe sizes were analyzed to determine their potential impact to the flow regime downstream of the final void. All pipe sizes analyzed result in a similar flow regime with the peak flows reduced and an extended low flow period.

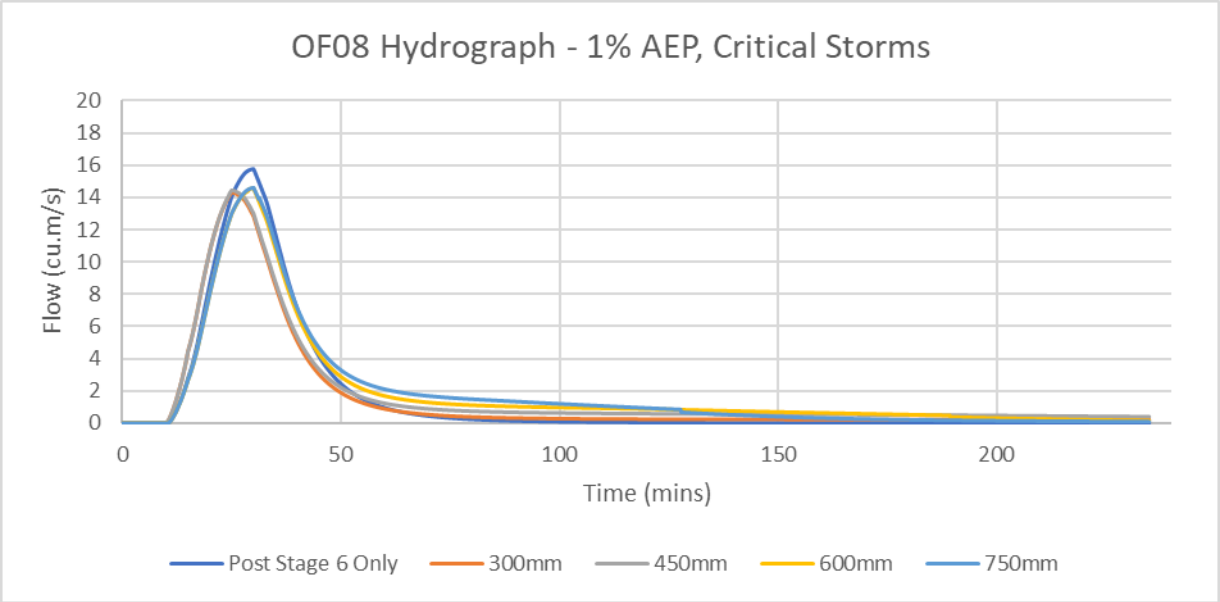



**Figure 25: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1% AEP**

The larger 750mm diameter pipe emptied the basin quicker than the 300mm pipe and had a shorter receding limb. However the 300mm diameter outlet pipe appeared to match the Post Stage 6 Only flows more closely than the 750mm diameter pipe.

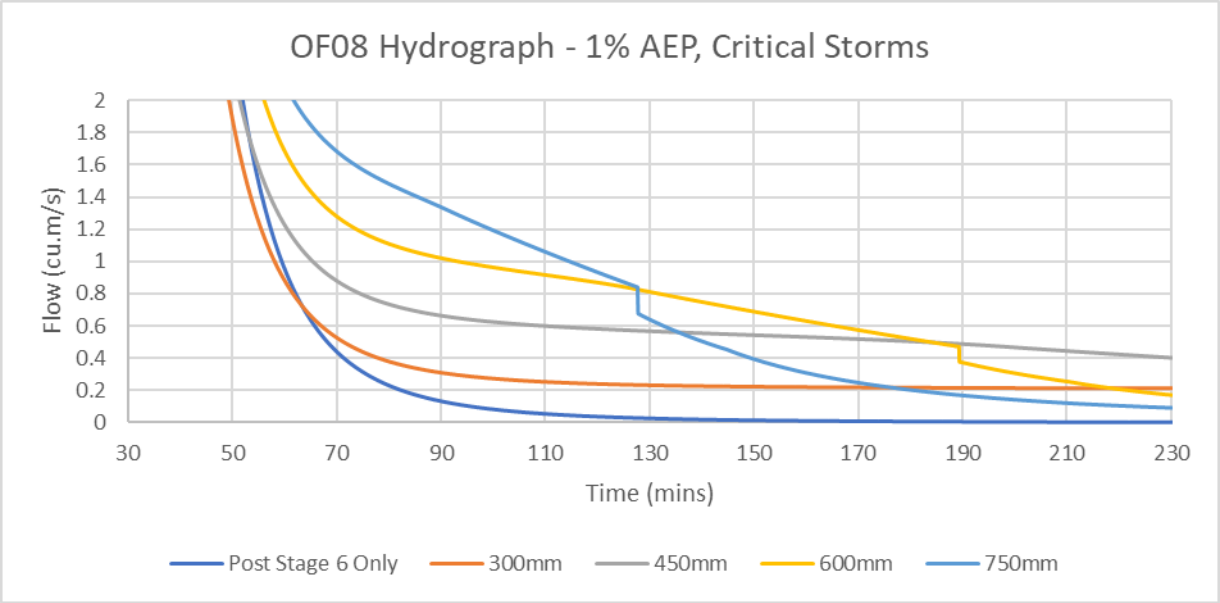



**Figure 26: Flow hydrograph at Discharge Location 3 downstream of catchment 8 – 1% AEP**

## Additional Information – Request for Information (RFI 8)

The peak flows generated by DRAINS for each of the final landform catchments for a 1% AEP and 10% AEP critical event are outlined in Table 3.

**Table 3: Post Stage 7 Final Landform Catchment Inflows.**

| Sub-catchment ID | Area (ha) | 10% AEP Inflow (m3/s) | 1% AEP Inflow (m3/s) |
|---|---|---|---|
| CA01 | 10.44 | 1.835 | 3.591 |
| CA02 | 8.23 | 1.456 | 2.854 |
| CA04 | 7.56 | 1.386 | 2.734 |
| CA06 | 3.38 | 0.759 | 1.568 |
| CA07 | 7.08 | 1.385 | 2.965 |
| CA08 | 23.40 | 4.362 | 8.602 |
| CA09 | 6.73 | 1.473 | 3.081 |
| CA10 | 24.96 | 3.765 | 8.077 |
| CA11 | 4.00 | 0.76 | 1.559 |
| CA12 | 13.20 | 2.427 | 4.787 |
| CA13 | 77.97 | 11.115 | 24.474 |
| CA14 | 48.73 | 6.06 | 12.684 |
| CA15 | 56.38 | 6.741 | 14.356 |
| CA16 | 11.84 | 1.178 | 2.596 |
| CA17 | 19.81 | 2.21 | 4.702 |
| **Total Area** | **323.70** | | |

The Peak inflows to the southern and western sumps are provided in Table 4.

**Table 4: Post Stage 7 Final Landform Sump Inflows.**

| Sub-catchment ID | Contributing Catchments | Area (ha) | 10% AEP Inflow (m3/s) | 1% AEP Inflow (m3/s) |
|---|---|---|---|---|
| Southern Sump | 17 | 19.81 | 2.21 | 4.702 |
| Western Sump | 11 and 12 | 17.2 | 3.16 | 6.25 |

The fluctuation in stored water volume in the Post Stage 7 Western sump throughout the 10% AEP and 1% AEP critical storm events are shown in Figure 27 and Figure 28, respectively. The graphs also show additional vertical axes at 4, 10 and 24 hours. Note that the volume will vary depending on the design storm.

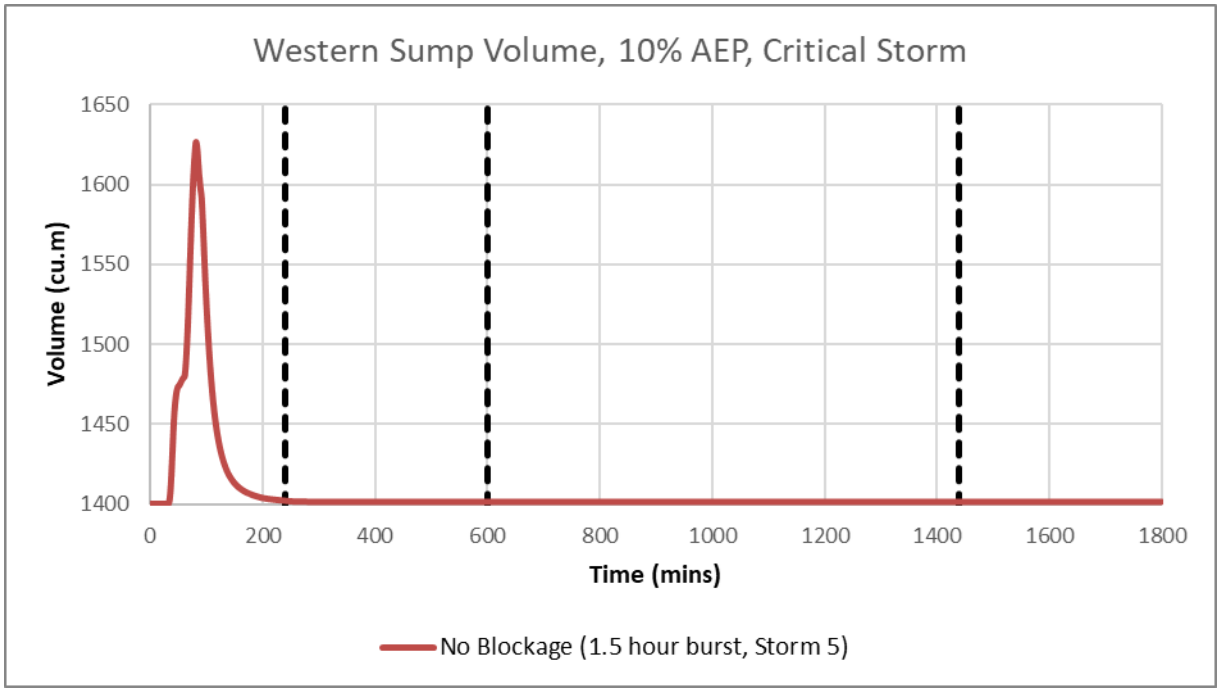



**Figure 27: Post Stage 7 Western sump, 10% AEP, critical storm.**

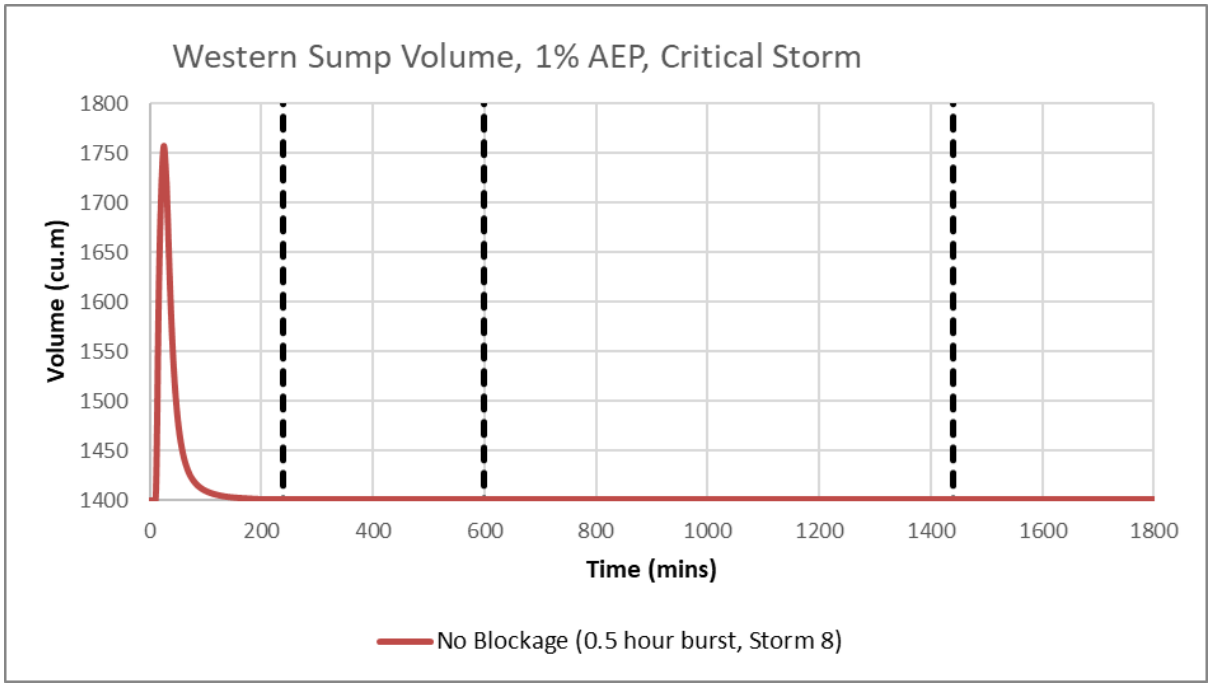



**Figure 28: Post Stage 7 Western sump, 1% AEP, critical storm.**

The fluctuation in stored water volume in the Southern sump throughout the 10% AEP and 1% AEP critical storm events (with no pipe blockage and complete pipe blockage) are shown in Figure 29 and Figure 30, respectively. The graphs also show additional vertical axes at 4, 10 and 24 hours. Note that the 168 hour (10,080 minute) storm is the longest duration available in DRAINS, however, a longer storm is likely to produce a greater volume.

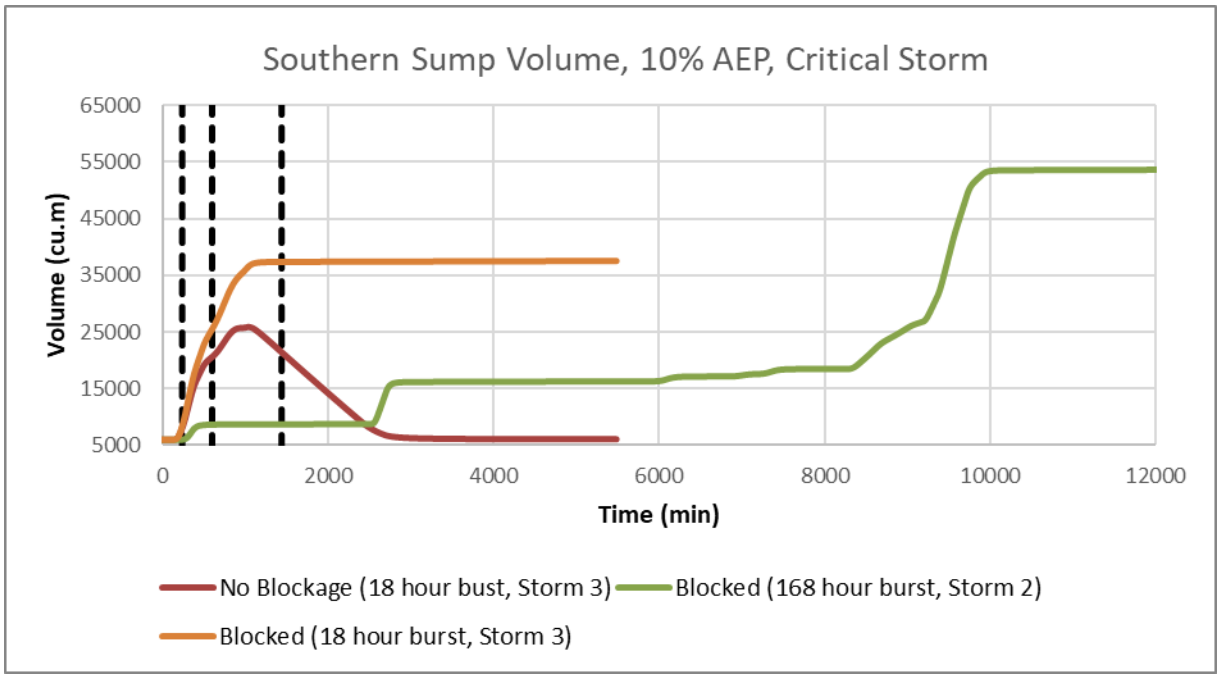



**Figure 29: Post Stage 7 Southern sump, 10% AEP, critical storms.**

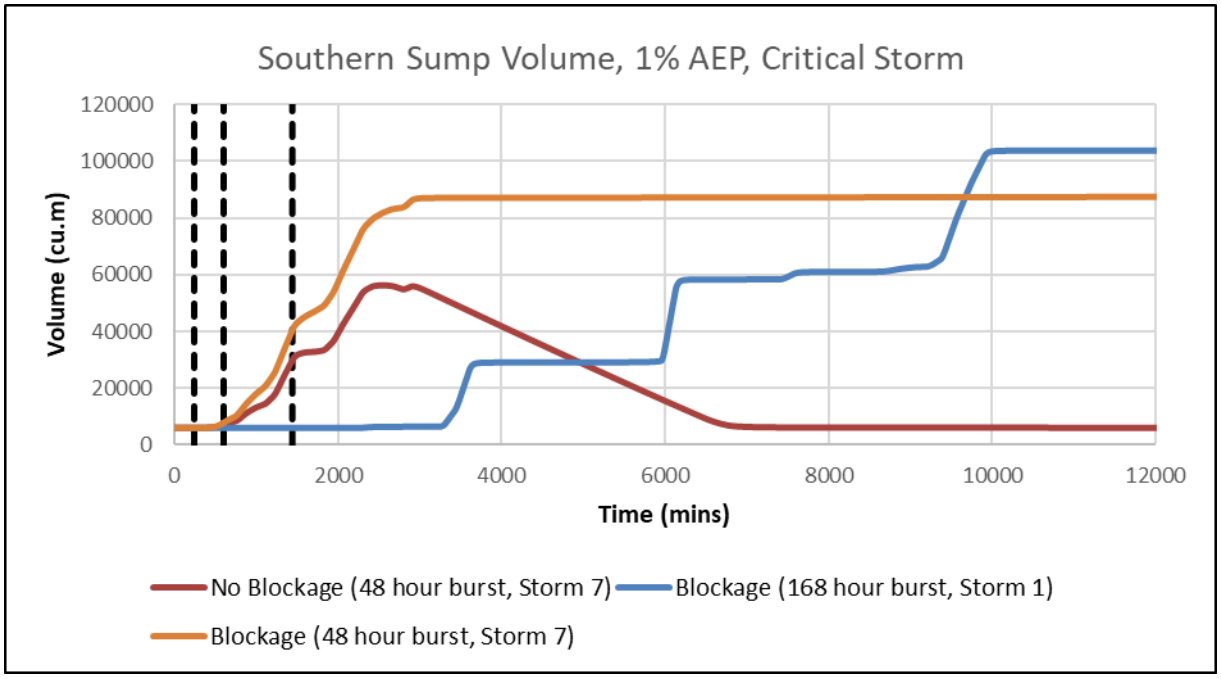



**Figure 30: Post Stage 7 Southern sump, 1% AEP, critical storms.**

A summary of these results, estimating the peak sump volumes at 4, 10 and 24 hours for the critical duration storms, for the unblocked case, and the maximum storm duration for the blocked case, is shown in Table 5. Note that this estimate is based on a single event (the critical event for each sump), not a water balance. It is possible that a much longer storm duration produces the maximum water volume in the blocked pipe scenario.

The peak volume for the Western Sump is achieved at 25 minutes for the 1% AEP storm event (0.5 hour burst, storm 8) and 80 minutes for the 10% AEP storm event (1.5 hour burst, storm 5), with the pond volume reduced to the minimum volume of 1,401$m^3$ within 4 hours.

Under free draining conditions, the peak volume for the Southern Sump under a 10% AEP critical storm event (18 hour burst, storm 3) would be 25,865$m^3$ at 1039 minutes (17.3 hours). At this point, based on the final landform design provided, the pond surface area would be approximately 21,125$m^2$, with the surface water level approximately 2.97m above the pipe inlet. Under a free draining scenario, the pond water level and volume would gradually reduce to the modelled minimum of 5,978$m^3$ within approximately 3000 minutes (50 hours).

Under free draining conditions, the peak volume for the Southern Sump under a 1% AEP critical storm event (48 hour burst, storm 7) would be 56,287$m^3$ at 2544 minutes (42.4 hours). At this point, based on the final landform design provided, the pond surface area would be approximately 41,000$m^2$, with the surface water level approximately 3.98m above the pipe inlet. Under a free draining scenario, the pond water level and volume would gradually reduce to the modelled minimum of 5,978$m^3$ by 7000 minutes (117 hours).

In both cases, in the event of a fully blocked pipe, the water volume would remain at close to the maximum level until the accumulated water could be pumped from the final void or the pipe unblocked. It is noted, however, that a complete blockage would be highly unlikely as under a worst-case scenario of a collapsed hole liner, the pipe would still convey some water and the void would drain, albeit more slowly than under a free draining scenario.

**Table 5: Post Stage 7 Sump volumes (cu.m) throughout storm duration.**

| Sump | % AEP | Storm Event | | % Blockage | Sump Volume (cu.m) at: | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Peak | 4 hours | 10 hours | 24 hours |
| Western Sump | 10 | 1.5 hour | storm 5 | 0 | 1,626 | 1,401 | 1,401 | 1,401 |
| | 1 | 0.5 hour | storm 8 | 0 | 1,757 | 1,401 | 1,401 | 1,401 |
| Southern Sump | 10 | 18 hour | storm 3 | 0 | 25,865 | 8,115 | 20,579 | 21,429 |
| | 10 | 18 hour | storm 3 | 100 | 37,540 | 8,450 | 25,492 | 37,370 |
| | 10 | 168 hour | storm 2 | 100 | 53,962 | 5,979 | 8,632 | 8,686 |
| | 1 | 48 hour | storm 7 | 0 | 56,287 | 5,978 | 7,338 | 29,866 |
| | 1 | 48 hour | storm 7 | 100 | 87,554 | 5,978 | 7,819 | 40,452 |
| | 1 | 168 hour | storm 1 | 100 | 104,131 | 5,978 | 5,978 | 5,978 |

## Conclusion

The model results indicate that the void and proposed unblocked outlet pipe has a minor impact to peak flow rates in the streams downstream of the basin across a range of design flood events. The low flows at the receding limb of the hydrograph are extended, however the flow rates are generally less than 0.2$m^3$/s for a period of no more than 24 hours. This result is similar for a range of potential pipe sizes.

The modelling indicates that the water volume in the southern sump can take 16.7 hours to peak for the 10% AEP storm event (18 hour burst, storm 3) and up to 41.7 hours in the 1% AEP storm event (48 hour burst, storm 7) when the outlet pipe has no blockage. This extends to around 18.3 and 50 hours when the pipe is blocked for the same 10% and 1% AEP storm events, respectively. As noted previously, this may change for other design events.

If you would like to discuss any aspect of the above, please feel free to contact me on 0407 261 515 or bjohnson@seec.com.au

Yours faithfully,

Bill Johnson
Director, SEEC

# Attachment B

## Land Titles

(Total No. of pages including blank pages = 13)

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/858245

| SEARCH DATE | TIME | EDITION NO | DATE |
|---|---|---|---|
| 17/8/2023 | 2:32 PM | 6 | 19/5/2010 |

LAND

LOT 2 IN DEPOSITED PLAN 858245
AT ALBION PARK RAIL
LOCAL GOVERNMENT AREA SHELLHARBOUR
PARISH OF TERRAGONG COUNTY OF CAMDEN
TITLE DIAGRAM DP858245

FIRST SCHEDULE

HOLCIM (AUSTRALIA) PTY LTD (CN AF502114)

SECOND SCHEDULE (3 NOTIFICATIONS)

* 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN WITHIN THE PART(S) SHOWN SO INDICATED IN THE TITLE DIAGRAM - SEE CROWN GRANT(S) & MEMORANDUM S700000A

2 DP1120612 RIGHT OF ACCESS VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1120612

3 DP1120612 RIGHT OF ACCESS VARIABLE WIDTH APPURTENANT TO THE LAND ABOVE DESCRIBED

NOTATIONS

UNREGISTERED DEALINGS: PP DP1288268.

*** END OF SEARCH ***

116602 PRINTED ON 17/8/2023

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

# INSTRUMENT SETTING OUT TERMS OF EASEMENTS AND RESTRICTIONS ON THE USE OF LAND INTENDED TO BE CREATED PURSUANT TO SECTION 88B, CONVEYANCING ACT, 1919

Lengths are in metres 

Plan No.

DP1120612

Full name and address of the proprietors of the land:

Rinker Australia Pty Limited (formerly Readymix Holdings Pty Ltd)
(ACN 099 732 297)
Level 8
Tower Basement
799 Pacific Highway
CHATSWOOD NSW 2067

Bridon Pty Ltd
(ACN 001 045 594)
39 Five Islands Road
PORT KEMBLA NSW 2505

Cleary Bros (Bombo) Pty Ltd
(ACN 000 157 808)
39 Five Islands Road
PORT KEMBLA NSW 2505

## PART 1

| Number of Item | Identity of Right of Access referred to in the Plan | Burdened Lot | Benefited Lot(s) |
|---|---|---|---|
| 1. | Right of Access variable width (A) | 2 / 858245 | 23 / 1039967 & 1 / 858245 & 7/3709 |
| 2. | Right of Access variable width (B) | 1 / 858245 | 2/858245 |

## PART 2

**Definitions**

For the purpose of this Instrument, the following words have the following meanings unless the contrary intention appears:

(a) **Easement** means each easement referred to in each section of this Instrument and includes the conditions in relation to the easement.

(b) **Easement Site** means, in relation to a particular Easement, the part of the lot burdened shown as the site of that Easement on the plan.

(c) **Grantee** means the registered proprietor(s) from time to time of the lot benefited.

(d) **Grantee's Authorised Users** means every person authorised by the Grantee for the purpose of the Easement and includes but is not limited to the Grantee's employees, contractors, lessees, licensees and agents.

(e) **Grantor** means the registered proprietor from time to time of the lot burdened.

(f) **Grantor's Authorised Users** means every person authorised by the Grantor for the purpose of the Easement and includes but is not limited to the Grantor's employees, contractors, lessees, licensees and agents.

(g) **Instrument** means this section 88B instrument.

(h) **Access Road Deed of Agreement** means the deed of agreement of that name and of or about the date of this Instrument made between the Parties in connection with the Easement created pursuant to Part 2 clause 1 of this Instrument.

(i) **Approval** means any certificate, license, consent (including any modification or consent granted pursuant to an appeal), permit, approval (including any modification or approval granted pursuant to an appeal) or other requirement of any Authority having jurisdiction in connection with the activities contemplated by this Instrument.

(j) **Authority** means any government, semi governmental, statutory, administrative, fiscal or judicial body, minister, department, commission, authority, tribunal, public or other person and includes the Council and any nominee appointed for the purpose of clause 6.5 of the Access Road Deed of Agreement.

(k) **Bridge** means the bridge referred to in the Access Road Deed of Agreement.

(l) **Bridon** means Bridon Pty Ltd ACN 001 045 594.

(m) **Cleary Bros** means Cleary Bros (Bombo) Pty Ltd ACN 000 157 808.

(n) **Council** means Shellharbour City Council.

(o) **Dunsters Lane** means the road adjoining Lot 1 in Deposited Plan 858245.

(p) **Dunsters Lane Deed of Agreement** means the deed of agreement of that name and of or about the date of this Instrument made between the Parties in connection with the Easement created pursuant to Part 2 clause 2 of this Instrument.

(q) **Law** means:

(1) any law applicable including legislation, ordinances, regulations, by-laws and other subordinate legislation; and

(2) any Approval, including any condition or requirement under it.

(r) **Parties** means Bridon, Cleary Bros and Rinker.

(s) **Rinker** means Rinker Australia Pty Limited ACN 099 732 297.

**1 Terms of Right of Access Variable Width firstly referred to in the Plan ((A) on the Plan)**

1.1 **Use of Easement**

The Grantee and the Grantee's Authorised Users may by any reasonable means pass and repass across and along the Easement Site to get to or from any part of the Benefited Lot solely for the purposes of:

(a) the construction, drainage, repair and maintenance of the road and the fencing erected on the Easement Site;

(b) the transport on that road of materials, equipment and people in connection with the Grantee's actual or proposed hard rock quarrying operations on the Benefited Lot or any part of the Benefited Lot, such operations excluding commercial landfill and other activities not directly related to the extraction, processing and stockpiling of aggregate and rehabilitation;

and for purposes ancillary to the foregoing and permitted under any Approval.

1.2 **Exercise of rights**

(a) The Grantee may continue to exercise its rights referred to in Part 2 clause 1.1 of this Instrument on condition that the Grantee does not:

(1) contravene and ensures that the Grantee's Authorised Users do not contravene:

(A) any applicable Law;

(B) the requirements of any Authority or Council;

(C) any reasonable security, safety, environmental and other reasonable requirements of the Grantor relating to the Grantee's and the Grantee's Authorised Users use of the Easement Site; and

(D) any security arrangement agreed to pursuant to the Access Road Deed of Agreement;

(2) cause any material inconvenience to the Grantor or any occupier of the Burdened Lot;

(3) prevent the Grantor or any occupier of the Burdened Lot from accessing the Burdened Lot to carry on their business in accordance with any applicable Law;

(4) carry out on the Easement Site any work without providing the Grantor with details and prior notice of any work which the Grantee or the Grantee's Authorised Users propose to carry out on the Easement Site; and

(5) carry out any work on the Easement Site other than in a proper and workmanlike manner.

(b) The Grantor must not contravene, and must ensure that the Grantor's Authorised Users do not contravene:

(1) any applicable Law;

(2) the requirements of any Authority or Council; and

(3) any security arrangement agreed to pursuant to the Access Road Deed of Agreement.

1.3 **Extinguishment of Easement**

(a) The Grantor may extinguish the Easement where:

(1) the Grantee breaches a term of the Easement and, within a reasonable time (not exceeding 30 days) of being requested by the Grantor to do so in writing, fails to:

(A) rectify that breach; or

(B) offer reasonable compensation to the Grantor for the breach;

(2) there is no Approval for the Grantee to conduct hard rock quarrying operations on a commercial scale on any part of the Benefited Lot nor an application by the Grantee for such Approval which is pending and being pursued by the Grantee diligently and expeditiously;

(3) the Easement referred to in Part 2 clause 2 of this Instrument is extinguished except for extinguishment as a result of the construction of the Bridge or an alternative means of access to Dunsters Lane as provided in the Access Road Deed of Agreement or extinguishment as a result of the Grantor not being entitled by Law to use Dunsters Lane or the Easement referred to in Part 2 clause 2 of this Instrument;

(4) the Access Road Deed of Agreement is terminated; or

(5) the Dunsters Lane Deed of Agreement is terminated except for termination as a result of the construction of the Bridge or an alternative means of access to Dunsters Lane as provided in the Access Road Deed

of Agreement or termination as a result of the Grantor not being entitled by Law to use Dunsters Lane or the Easement referred to in Part 2 clause 2 of this Instrument.

**2 Terms of Right of Access secondly referred to in the Plan ((B) on the Plan)**

2.1 **Use of Easement**

The Grantee and the Grantee's Authorised Users may by any reasonable means pass and repass across and along the Easement Site to get to or from any part of the Benefited Lot solely for the purposes of access to or from Dunsters Lane by pedestrians and vehicular traffic which are permitted by Law to use Dunsters Lane.

2.2 **Exercise of rights**

(a) The Grantee may continue to exercise its rights referred to in Part 2 clause 2.1 of this Instrument on condition that the Grantee does not:

(1) contravene and ensures that the Grantee's Authorised Users do not contravene:

(A) any applicable Law;

(B) the requirements of any Authority or Council;

(C) any reasonable security, safety, environmental and other reasonable requirements of the Grantor relating to the Grantee's and the Grantee's Authorised Users use of the Easement Site; and

(D) any security arrangement agreed to pursuant to the Access Road Deed of Agreement.

(2) cause any material inconvenience to the Grantor or the registered proprietor from time to time of lot 23 in deposited plan 1039967 or any occupier of the Burdened Lot;

(3) prevent the Grantor or the registered proprietor from time to time of lot 23 in deposited plan 1039967 or any occupier of the Burdened Lot from accessing the Burdened Lot to carry on their business in accordance with any applicable Law provided that such access does not cause any material inconvenience to the Grantee or the Grantee's Authorised Users in their enjoyment of the Easement Site.

(b) The Grantor must not contravene, and must ensure that the Grantor's Authorised Users or the registered proprietor from time to time of Lot 23 in deposited plan 1039967 and any occupier of the Burdened Lot do not contravene:

(1) any applicable Law;

(2) the requirements of any Authority or Council; and

(3) any security arrangement agreed to pursuant to the Access Road Deed of Agreement.

2.3 **Extinguishment of Easement**

The Grantor may extinguish the Easement where:

(a) the Grantee breaches a term of the Easement and, within a reasonable time (not exceeding 30 days) of being requested by the Grantor to do so in writing, fails to:

(1) rectify that breach; or

(2) offer reasonable compensation to the Grantor for the breach.

(b) the Easement referred to in Part 2 clause 1 of this Instrument is extinguished;

(c) the Access Road Deed of Agreement is terminated;

(d) the Dunsters Lane Deed of Agreement is terminated; or

(e) the Grantee has been provided with the Bridge or an alternative means of access to Dunsters Lane as provided in the Access Road Deed of Agreement; or

(f) the Grantee is not entitled by Law to use Dunsters Lane or this Easement.

# INSTRUMENT SETTING OUT TERMS OF EASEMENTS AND RESTRICTIONS ON THE USE OF LAND INTENDED TO BE CREATED PURSUANT TO SECTION 88B, CONVEYANCING ACT, 1919

Lengths are in metres 

Plan No.

DP1120612

**Name of person or authority empowered to release, vary or modify the Right of Access firstly referred to in the plan is the registered proprietor(s) of the Benefited Lot(s).**

**Executed** by **Rinker Australia Pty Limited (formerly Readymix Holdings Pty Ltd)** ACN 099 732 297 in accordance with section 127 of the *Corporations Act 2001* (Cth) by: )

| | |
|---|---|
| ..... | ..... |
| Signature of Director | Signature of Director/~~Secretary~~ |
| MARK E. CAMPBELL | KEITH R. CAREW |
| ..... | ..... |
| Print name of Director | Print name of Director/~~Secretary~~ |

**Executed** by **Bridon Pty Ltd** ACN 001 045 594 in accordance with section 127 of the *Corporations Act 2001* (Cth) by: )

| | |
|---|---|
| ..... | ..... |
| Signature of Director | Signature of Director/~~Secretary~~ |
| ..... | ..... |
| Print name of Director | Print name of Director/~~Secretary~~ |

# INSTRUMENT SETTING OUT TERMS OF EASEMENTS AND RESTRICTIONS ON THE USE OF LAND INTENDED TO BE CREATED PURSUANT TO SECTION 88B, CONVEYANCING ACT, 1919

Lengths are in metres (Sheet 10 of 10 sheets)

Plan No.

DP1120612

**Executed** by **Cleary Bros (Bombo) Pty Ltd** ACN 000 157 808 in accordance with section 127 of the *Corporations Act 2001* (Cth) by:

Signature of Director

Signature of Director/~~Secretary~~

Denis Cleary

Print name of Director

BRETT CLEARY.

Print name of Director/~~Secretary~~

**Signed** for Australia and New Zealand Banking Group Limited by its attorney pursuant to Power of Attorney Registered No. ~~Book No.~~ dated

(who states that by executing this document that the attorney has received no notice of revocation of the power of attorney):

SIGNED SEALED & DELIVERED on behalf of Australia and New Zealand Banking Group Limited by its attorney under power of attorney registered Book 4320 No 80 in the presence of:

Witness Signature

Anthony Stephen Woods.

Print Name

Attorney Signature

Paul Anthony Armstrong.

Print Name

REGISTERED on 11.12.2007

BBF\BBF\DSYD\19471131\1 BBF\BBF\DSYD\19471131\1
ME_73633132_1 (W2003)

PLAN FORM 2 (APPROVED FORM 3)

Plan Drawing only to appear in this space

SIGNATURES, AND SEALS ONLY.

THE COMMON SEAL OF READYMIX HOLDINGS PTY. LIMITED (ACN ) WAS HEREUNTO AFFIXED PURSUANT TO A RESOLUTION OF ITS BOARD OF DIRECTORS AND IN THE PRESENCE OF:
EXECUTED By Rinker Australia Pty Limited ACN 099 732 297 In Accordance With Section 127 The Corporations Act 2001

DIRECTOR — SECRETARY

MARK EDWARD CAMPBELL Director — KEITH ROBERT JOSEPH CAREN Director

EXECUTED By BRIDON PTY. LIMITED (ACN 001 045 594) In Accordance With Section 127 of The Corporations Act 2001
~~THE COMMON SEAL OF BRIDON PTY. LIMITED (ACN 001 045 594) WAS HEREUNTO AFFIXED PURSUANT TO A RESOLUTION OF ITS BOARD OF DIRECTORS AND IN THE PRESENCE OF:~~

DIRECTOR — SECRETARY

Director — Director

Denis Cleary — Brett Cleary

EXECUTED By Cleary Bros (Bombo) Pty Ltd. ACN 000 157 808 In Accordance With Section 127 of The Corporations Act 2001.

Director — Director

Denis Cleary — Brett Cleary

SIGNED SEALED & DELIVERED on behalf of Australia and New Zealand Banking Group Limited by its attorney under power of attorney registered Book 4320 No 80 in the presence of:

Anthony Wood — Paul Anthony Armstrong

VP Client 70353

**Department of Lands Approval**

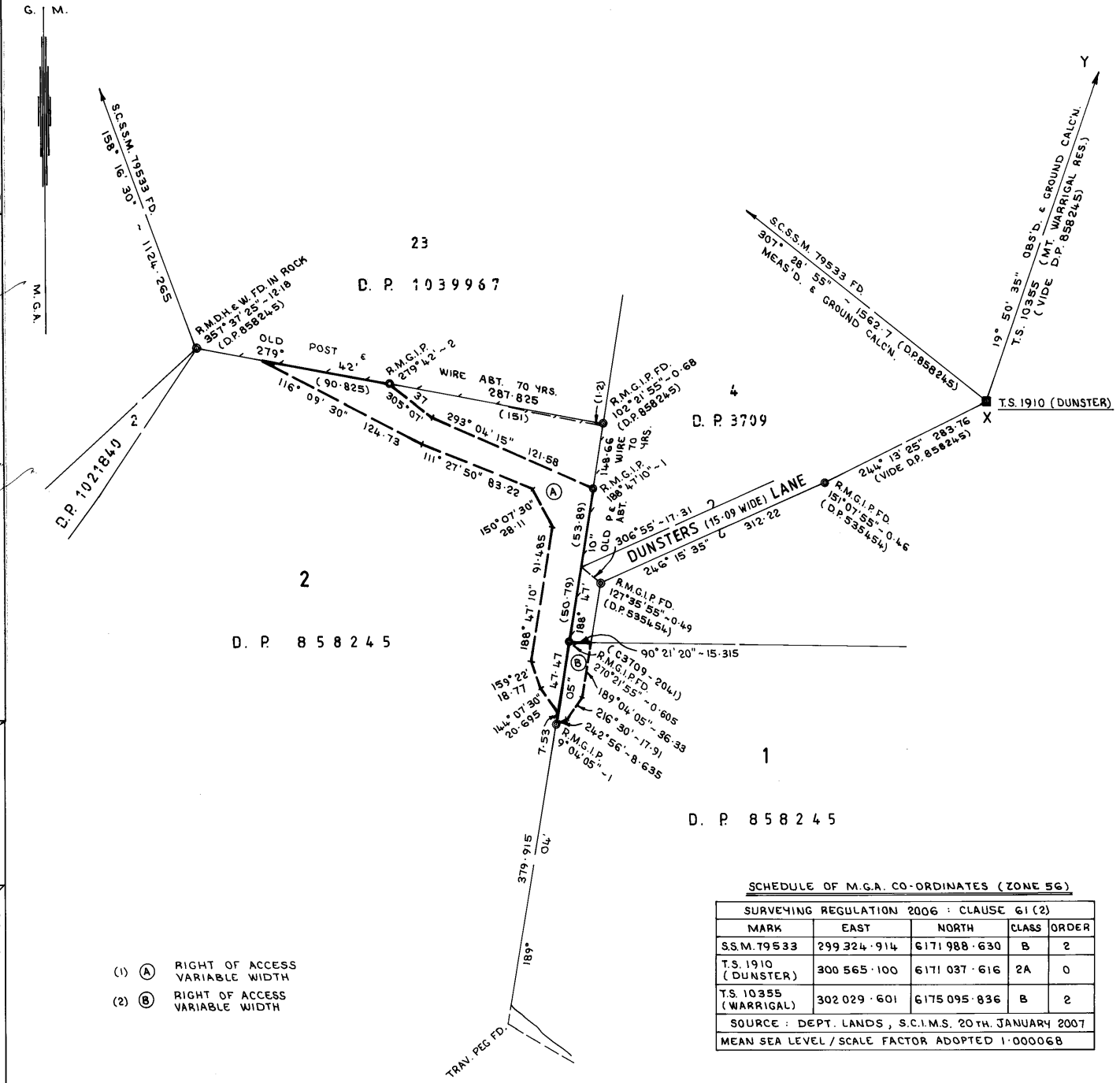
I,.....in approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown hereon have been given.

Signature:.....
Date:.....
File Number:.....
Office:.....

**Subdivision Certificate**

*I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed*
.....*set out herein*
*(Insert 'subdivision' or 'new road')*
.....
*Authorised Person/General Manager/Accredited Certifier*
*Consent Authority:*.....
*Date of Endorsement:*.....
*Accreditation No:*.....
*Subdivision Certificate No:*.....
*File No:*.....
*Delete whichever is inapplicable

SURVEYOR'S REFERENCE: 106208 / 0107




SCHEDULE OF M.G.A. CO-ORDINATES (ZONE 56)

| SURVEYING REGULATION 2006 : CLAUSE 61(2) | | | | |
|---|---|---|---|---|
| MARK | EAST | NORTH | CLASS | ORDER |
| S.S.M. 79533 | 299 324·914 | 6171 988·630 | B | 2 |
| T.S. 1910 (DUNSTER) | 300 565·100 | 6171 037·616 | 2A | 0 |
| T.S. 10355 (WARRIGAL) | 302 029·601 | 6175 095·836 | B | 2 |
| SOURCE : DEPT. LANDS, S.C.I.M.S. 20TH. JANUARY 2007 | | | | |
| MEAN SEA LEVEL / SCALE FACTOR ADOPTED 1·000068 | | | | |

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Table of mm 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

CHECKLIST

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

# DP1120612

Registered: 11·12·2007 *
Title System: TORRENS
Purpose: EASEMENT
Ref. Map: W8270-7#
Last Plan: D.P. 858245

PLAN OF RIGHT OF ACCESS OVER LOTS 1&2 D.P.858245

Lengths are in metres Reduction Ratio 1: 2000

L.G.A.: SHELLHARBOUR
Locality: ALBION PARK RAIL
Parish: TERRAGONG
County: CAMDEN

~~This is sheet 1 of my plan in sheets.~~
(Delete if inapplicable)

**Surveying Regulation 2006**

I, NEIL CRAIG JOHNSON
of K.F. WILLIAMS & ASSOCS PTL P.O.BOX 1477 W'GONG
a surveyor registered under the Surveyors Act, 2002, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying Regulation 2006 and was completed on 23 RD. JANUARY 2007
The survey relates to: RIGHT OF ACCESS
(here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)
(Signature) ..... Dated: 23-01-07
Surveyor registered under the Surveying Act, 2002
Datum Line: X - Y
Type: ~~Urban~~ / Rural ACN 008 664 417

Plans used in preparation of Survey/~~Compilation~~

D.P. 858245 D.P. 3709
D.P. 1039967 D.P. 1021840

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants

PURSUANT TO SEC. 88 B OF THE CONVEYANCING ACT, 1919, IT IS INTENDED TO CREATE:

1) RIGHT OF ACCESS VARIABLE WIDTH
2) RIGHT OF ACCESS VARIABLE WIDTH

AS SET OUT IN THE ACCOMPANYING INSTRUMENT

*OFFICE USE ONLY