

Former AMCOR Papermill Site

***Groundwater Management Plan – Amcor Site Yarra
Riverfront***

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Executive Summary

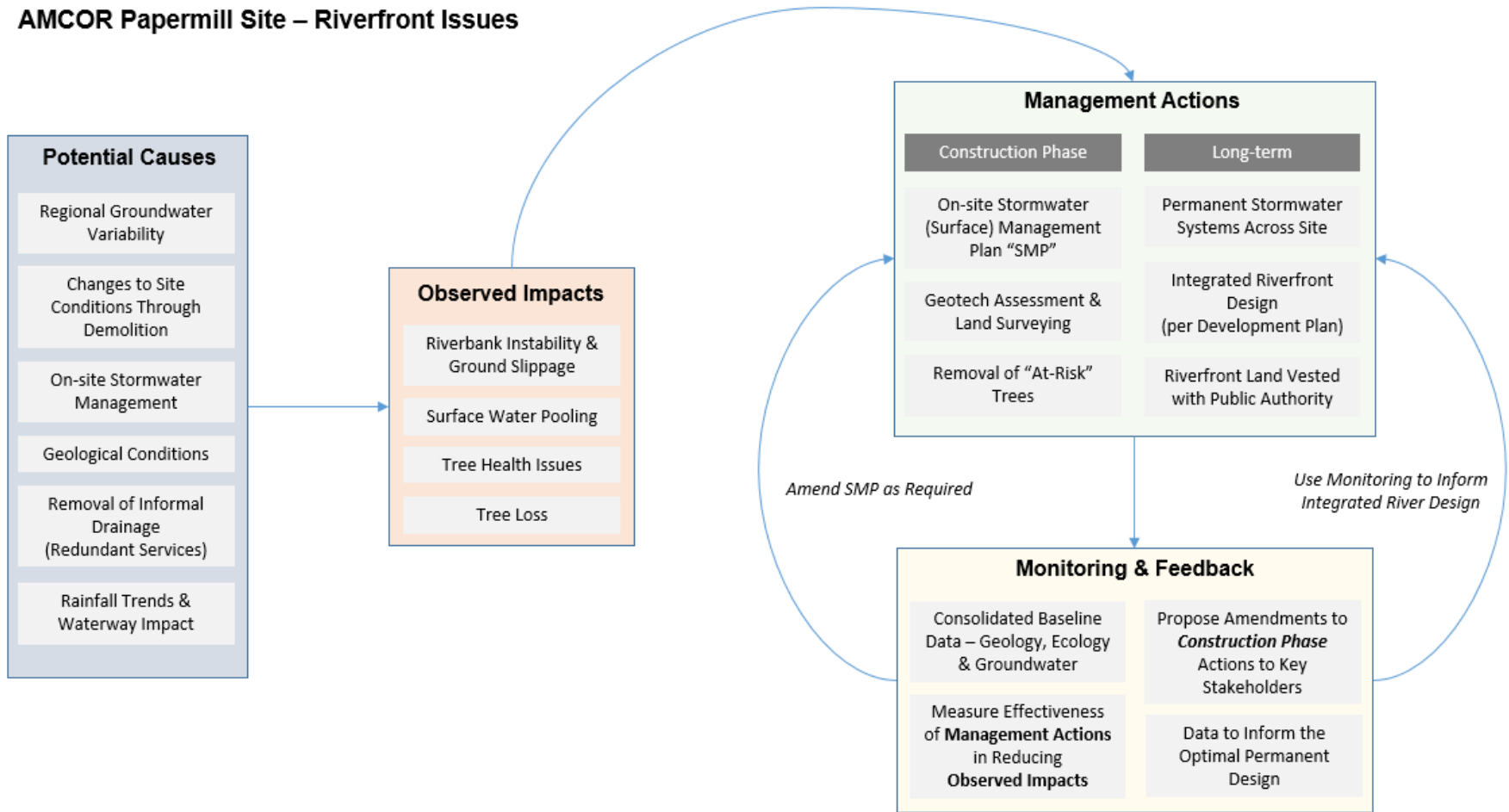
This Groundwater Management Plan (Plan) is provided in response to recent tree collapse and bank slumping events on the edge of the AMCOR site in Alphington.

The Plan provides a background and overview of the key issues and provides a focus on the baseline data and an ongoing monitoring regime to be implemented.

The focus on the Plan is a multi-discipline response by Glenvill to report on the issues to the various government and community stakeholders.

Management Plan Overview – Framework

AMCOR Papermill Site – Riverfront Issues



Section 1: Purpose

This Groundwater Management Plan (“Plan”) has been prepared in response to tree loss, bank slumping and groundwater seepage issues along the Yarra River frontage of the Former AMCOR Papermill (“AMCOR”) site.

The purpose of this Plan is to set out a considered approach to the management of the AMCOR river edge that covers the following:

1. Assessment of the existing stability of the riverbank and factors contributing to observed deterioration;
2. A series of “Management Actions” comprising practical, temporary steps to mitigate further deterioration of river bank before a permanent public reserve is designed, approved and vested with a public authority; and
3. A plan to monitor the riverbank and broader AMCOR site to measure the effectiveness of Management Actions throughout construction and identify if additional measures are required to reduce further short-term deterioration.

This Plan is supported by various documents included within the Appendix.

Section 2: Background

Previous Uses

The AMCOR site was first established as a paper making facility in 1918 and was progressively developed & operated until the facility's closure in 2012. Prior to the paper making facility the site existed as a homestead & farm property commonly known as "Woodlands Estate".

According to heritage consultant Lovell Chen "the riverside landscape is an area where significant change has occurred through the entire period of mill occupation. This is evidenced through historic aerial photographs indicating major landscaping works to the embankment." (Former Amcor Mill, Conservation Management Plan, Aug 2015)

Various Geotechnical investigations on the AMCOR site identify significant uncontrolled fill across the site in connection with past industrial activities. The depth of uncontrolled fill is relatively shallow at the north towards Heidelberg Road (approximately <1m deep) and is deepest towards the south at the river/crest line interface where depths range between 4-6m. More recent remediation and development activity has altered the status of the uncontrolled fill at the site and large areas are now occupied by new development or are under construction.

The use of the site as a papermill had a close connection with the Yarra River and the production processes utilised river water for a series of cooling processes. As part of the site operations an expansive network of private services existed below the site surface. These services have been removed from the site in the process of developing the land into a residential community.

Development Activities Since Acquisition

Following acquisition by Glenvill in 2013, the following is a brief chronology of key demolition and development activities completed to date:

- *Staged Demolition & Remediation 2013 – 2017*
- *Decommission of existing services and upgrade of main trunk infrastructure 2015-2017*
- *Civil Infrastructure 2015-ongoing*
- *House & Land precinct – completed*
- *Stages under construction – various stages & ongoing*
- *decommissioning of redundant Melbourne Water sewer (by others)*

Observed Events

The following are notable observed events on the riverfront area within the site over recent period:

- *tree loss events at two separate locations*
- *slumping observed on the east section associated lower terrace saturation/groundwater seepage*

Section 3: Development Plan Outcome

Development Plan Requirements

The Alphington Paper Mill Development Plan (“Development Plan”) was approved by the City of Yarra (“Council”) in May 2016 and sets out guidelines for the development of the AMCOR site. The Development Plan is in accordance with the requirements of the Development Plan Overlay (DPO 11) within the City of Yarra Planning Scheme.

Section 4 of the Development Plan sets out the vision and concept for the future “River Park” outcome to be delivered as part of the vision for the Masterplan. The River Park concept is outlined as follows:

“The 30 metre wide corridor along the Yarra River will become public open space and be known as “River Park”. The landscape is intended to both reinforce biodiversity whilst providing a softening of any visual impact of the proposed buildings, which will be set back 10m from the 30m P.O.S. zone. The intent is a riparian interface between the Yarra River and the proposed residential precinct. River Park, as public open space will be a refuge from the built environment with indigenous vegetation to support wildlife. It will reflect on layers of history; adapting existing industrial infrastructure for water access and former terracing for access paths.”

The design will include:

- *Public access for pedestrians and cyclists to the river, as well as constructing, trails along the river-frontage consistent in materials and width as those existing, which currently connects to pedestrian and cycle networks along the river to the surrounding neighbourhood.*
- *Access from the top of the bank to the river’s edge via modest stairs and ramped paths at grades suitable for the disabled.*
- *Appropriate vegetated buffer at residential interface to minimise the visual impact of the proposed built form.*
- *Species for biodiversity would be selected from the D.S.E EVC No56 “Floodplain Riparian Woodland”*
- *Retention of all healthy Eucalypt as well as significant pre settlement vegetation including remnant indigenous River Red Gums.*
- *Rehabilitation of the riverbank vegetation including removal of weeds and nominated trees, erosion control, planting of native species and ongoing vegetation management and maintenance.*

Other possible features include:

- *Cultural Heritage references of the former residential homestead to form part of the river park interpretation.*

The following Figures 60 & 61 are extracted from the approved Development Plan:

NOTE: Open space designs indicative only. Design to be to the responsible authority satisfaction.



FIG. 60: THE RIVER PARK PLAN

Potential Access via stairs to Chandler Hwy Bridge shared path (to future detailed design)

Pedestrian link to Industrial Heritage Precinct via steps
Formalize existing trail, width and materials to align with existing at east and west interfaces

Access to Riverpark via steps. Connection to existing trails.

Existing track connection

1.8m path along crest line

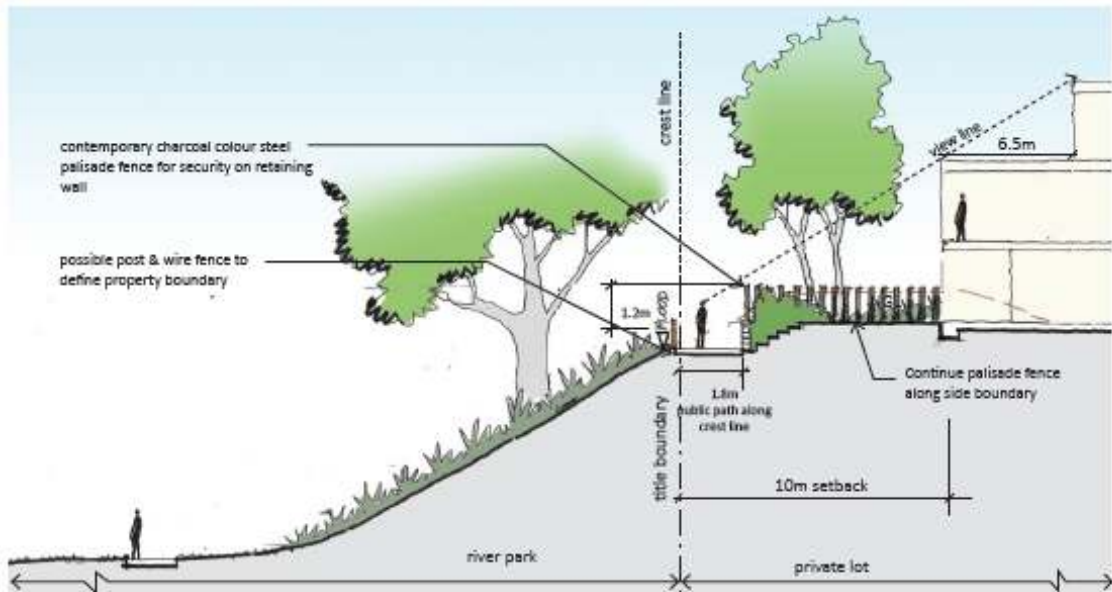
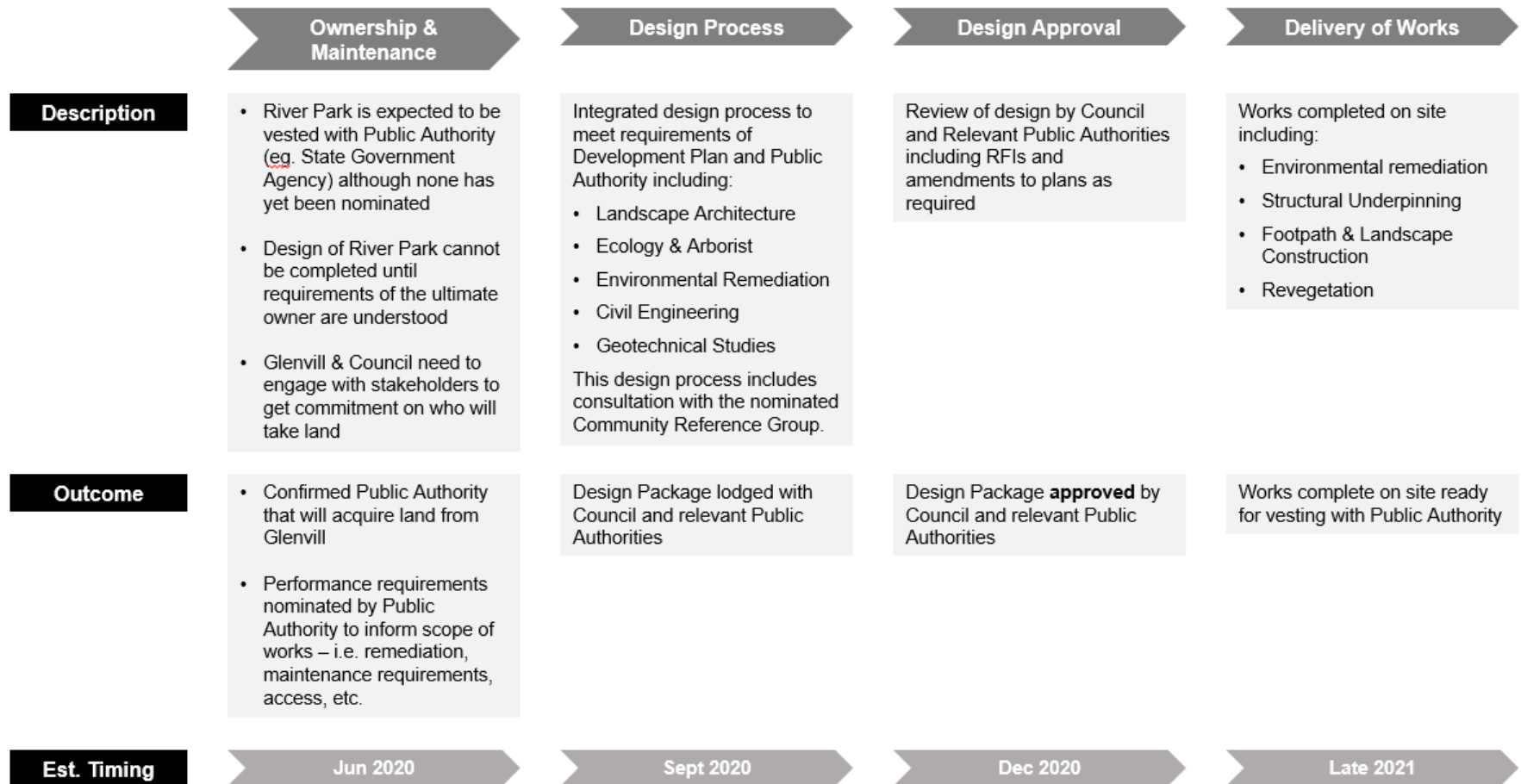


FIG. 61: THE RIVER PARK SECTION

Timeline & Process for “River Park” Delivery



* Note dates are subject to stakeholder approvals however some steps may overlap - i.e. remediation works may commence ahead of final design approval.

Section 4: Current Observations & Baseline Data

Consultants Observations

In response to City of Yarra's independent consultants (Alluvium) recommendation for a monitoring regime (**Appendix A**), Glenvill has engaged consultants to undertake a scope of works for a baseline data recording to inform an ongoing monitoring regime (See Section 6):

Baseline Survey & Data

1. **Groundwater** – Douglas Partners report on Geotechnical Investigations and Groundwater Study Yarra Bend: Riverfront Area Heidelberg Road, Alphington, 12 March 2020 (Appendix B)
2. **Land Survey** – Levels and Features Survey Plan by Reeds Consulting, 26 Feb 2020. (Appendix C)
3. **Vegetation** – Glenvill have engaged a Tree Survey report by Tree Logic on 12 March 2020 with field activities commencing on 3rd April 2020 and a final report anticipated by 17 April 2020. We note that the vegetation survey whilst desirable is not critical for commencing the ongoing monitoring regime prescribed.

The above documents are to be used as the framework for assessment of the ongoing monitoring regime in Section 6.

Section 5: Stormwater Management – Construction Phase

Glenvill has developed a site wide SEMP (Appendix D) for the construction phase of the project. In response to site wide stormwater management, a range of strategies were implemented onsite, including;

- Infilling of redundant sedimentation ponds
- Infilling of bunded area adjacent the Chandler Highway works
- Installation of swale/agi drain at the top of bank adjacent the House and Land precinct
- Holistic approach to assessment of the EPA stormwater compliance within each stage of construction by the respective building contractors
- Agreement for lining of a new sedimentation pond in the south west corner with design agreed as "Juttematte" (install scheduled for 6th April 2020)
- Installation of lower terrace ago drains in the saturated areas on the east side of the riverfront, noting that minimal works are necessary to ensure no further ground disturbance than necessary

The SEMP has been submitted and is to be approved by City of Yarra.

Section 6: Monitoring Program

Following the results of the baseline data in Section 4, Glenwill have engaged Douglas Partners and Reeds Consulting to undertake an ongoing monitoring regime in accordance with Alluvium's recommendations. The below is a summary of the key monitoring deliverable for each consultant's scope of works and the timeframes for each event;

Visual Monitoring Scope – Douglas Partners

Visual inspection Monitoring event to include:

- Inspection and photographs from the river (using a vessel) for the 3 identified slumps and other selected locations
- Measurements and sketches of the slumps will be taken per monitoring event
- Recording of data for each of the locations, west central and east, including;
 - Existing slump conditions, shape, (tape measurement checks, heights, levels) surface drainage / wet ground, any water emanating from the bank;
 - General evidence of bank slumping or instability, tension cracks, ground movement, extent and width.
 - Surface soil moisture and or free water observations, record of extent where observed;
 - Signs of seepage from the ground, in particular, the toe zone of the slope to the north. This would include seepage from the bank viewed from the river;
 - Significant changes in vegetation;
 - Any ground modification i.e. minor track maintenance or similar.

Groundwater Monitoring scope – Douglas Partners

Groundwater water levels in the (ten) recently installed wells will be downloaded from the auto dataloggers (installed week ending 20.3.2020) and a round of manual readings taken in the bores that don't have loggers. Samples will be taken for basic water chemistry and preparation of Piper Plots from each well for an early monitoring event.

The groundwater data will be correlated with river levels and rainfall readings.

Frequency of Douglas Partners monitoring events: Douglas Partners will undertake fortnightly inspections for 8 weeks followed by monthly inspections for 3 months. The first monitoring report by Douglas Partners is expected to be completed by 13th April 2020.

Survey Monitoring Scope – Reeds Consulting

Reeds consulting have installed a monitoring network (12 locations) around the key slump zones (installed on or around 4th March 2020) . Survey Prisms are installed on permanent star pickets in and around the slump zone that are to be monitored for 3 consecutive weeks to provide the baseline data. Following the baseline data, we expect the frequency of monitoring to align the Douglas Partners ongoing visual reports outlined above.

Frequency of Reeds monitoring events: 3 consecutive weeks to provide the baseline data. Following the baseline data, we expect the frequency of monitoring to align the Douglas Partners ongoing visual reports outlined above.

NB: The available Reeds Consulting monitoring is attached at Appendix E. We note that it is not unexpected to see movement within the slump zone and the results of the movement will be discussed in the Douglas Partners monitoring events.

Vegetation

Following the Tree report yet to be finalised, the scope of Reeds monitoring regime will be expanded to include the reporting of the tree slope angle changes over time as requested by Alluvium. Groundwater monitoring will be undertaken by Douglas Partners and reported fortnightly inspections for 8 weeks followed by monthly inspections for 3 months.

Process for unexpected findings or urgent matters

Whilst we expect the rate of change to be slow and there are no further immediate risks to be managed, in the event the monitoring and regular inspection regime indicates a more dramatic rate of change is occurring, Glenvill will follow a process to manage the risk in an orderly manner in terms of priority of risk to life, imminent danger and protection of environment, protection of flora and fauna. If the need for this response arises, all relevant stakeholders will be engaged in the decision-making process.

APPENDIX

- A. Alluvium recommendation on Monitoring Regime, 18 Feb 2020
- B. Douglas Partners report on Geotechnical Investigations and Groundwater Study Yarra Bend:
Riverfront Area Heidelberg Road, Alphington, 12 March 2020
- C. Reeds Levels and Features Plan, 26 Feb 2020
- D. Stormwater Construction Management Plan, CEMP
- E. Reeds Survey Monitoring Report 1 April 2020
- F. Alluvium Scorecard update by Glenvill as at 2nd April 2020