

# TALBOT VILLAGE

REGENERATION OF THE  
FORMER TALBOT QUARRY

## DOMAIN 2A, 3A, 3B & 5 PRELOAD WORKS COMMUNITY PRESENTATION

9 MARCH 2022

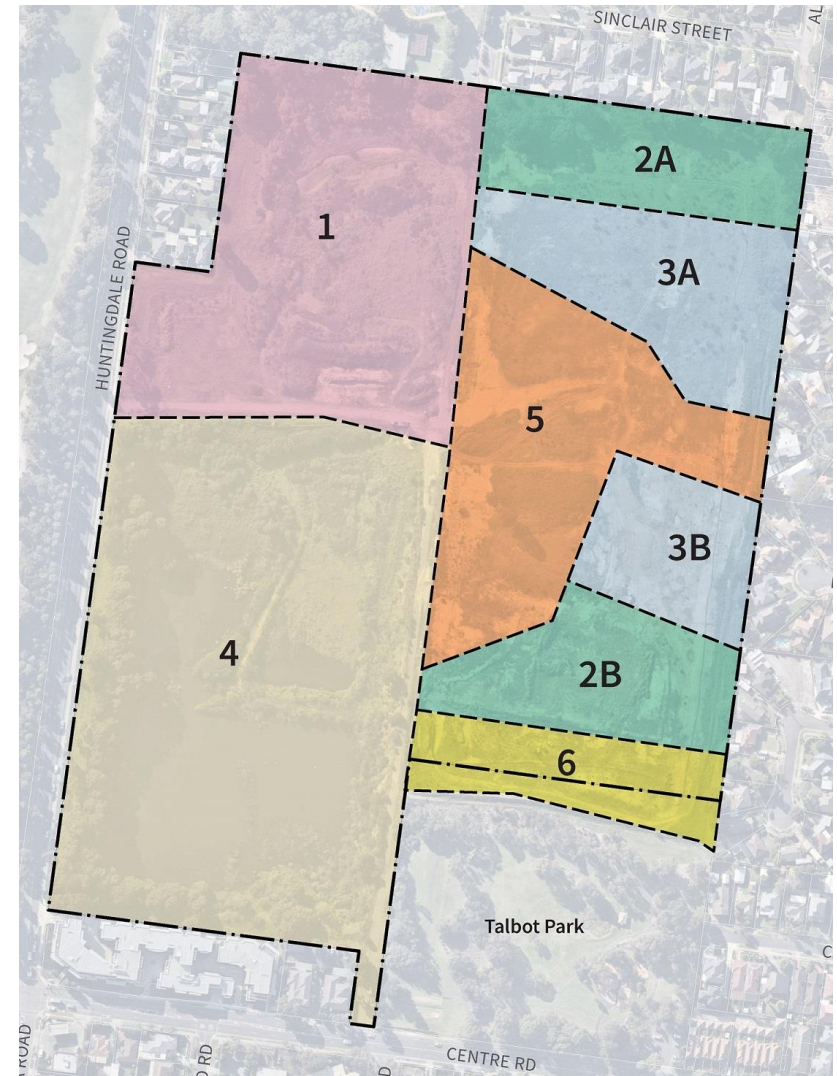
COUNCIL REFERENCE: TPA/53477

# SITE OVERVIEW

The Talbot Village site has been used both as a sand quarry and municipal landfill. From the 1950s to 1990s the site was used as a sand quarry and has been progressively backfilled since the 1970s. Part of the site (the section adjacent to Davies Reserve) was a former municipal landfill. A large section of the site remains an open quarry pit. Other parts of the site have been backfilled with slimes.

Based on previous uses and similar geotechnical properties, the site has been categorised in to 6 domains.

Domain	Condition
1	Former Council landfill (previously a quarry pit)
2A/2B	Quarry pit backfilled with slimes and uncontrolled fill
3A/3B	Quarry pit backfilled with slimes and uncontrolled fill
4	Existing quarry void, up to 18 metres deep, partially backfilled with uncontrolled fill and slimes
5	Quarry pit backfilled with slimes and uncontrolled fill. Eastern portion is the former sand processing and concrete batching plant area
6	Quarry pit backfilled with slimes, uncontrolled fill and construction & demolition debris (such as concrete and timber)



# HISTORY OF DOMAINS 2A/B, 3A/B & 5



February 2022

Domains 2A/B, 3A/B & 5 is a former quarry pit, backfilled progressively with slimes and uncontrolled fill from the mid 1970s to early 1990s.

The domains are bordered by properties along Sinclair Street, 10 Alvina Street and those at the end of Ashbrook Court, Kaybrook Court and Redpath Close.

Between 2017 and 2019 Sterling Global's contractor placed clean fill stockpiles in these domains as the commencement of the preloading and stockpiling process.



1972



1982



1992

# QUARRY EXCAVATION



PIT CREST (YEAR)



When originally excavated, the land was quarried quite close to the boundary, generally ranging from a 3 to 10 metre setback, and as close to 2.5 metres in some locations.

This diagram shows the outline of the former quarry pits at various times, as defined by excavated test pits on site, and historical aerial photographs.

# WHAT IS PRELOADING?

- Placement of fill over areas of ground that have poor structural properties – eg slimes and landfill
- Being a greater weight than future development, the load induces an amount of settlement prior to development such that new structures do not cause unacceptable levels of settlement
- Applies to all slimes areas and landfill (domains 1-6 excluding 4)
- Preload stockpiles should be a minimum of 2 metres high above final finished ground level of the future development
- Preload should cover the entire quarry pit for adequate ground improvement and minimisation of differential settlement
- Settlement is monitored by plates and surface pins to determine settlement trend and achievement of primary consolidation
- Preload stockpiles are removed and used as backfill for Domain 4
- Structures are designed with secondary consolidation considered such that any ongoing settlement occurs within tolerable ranges



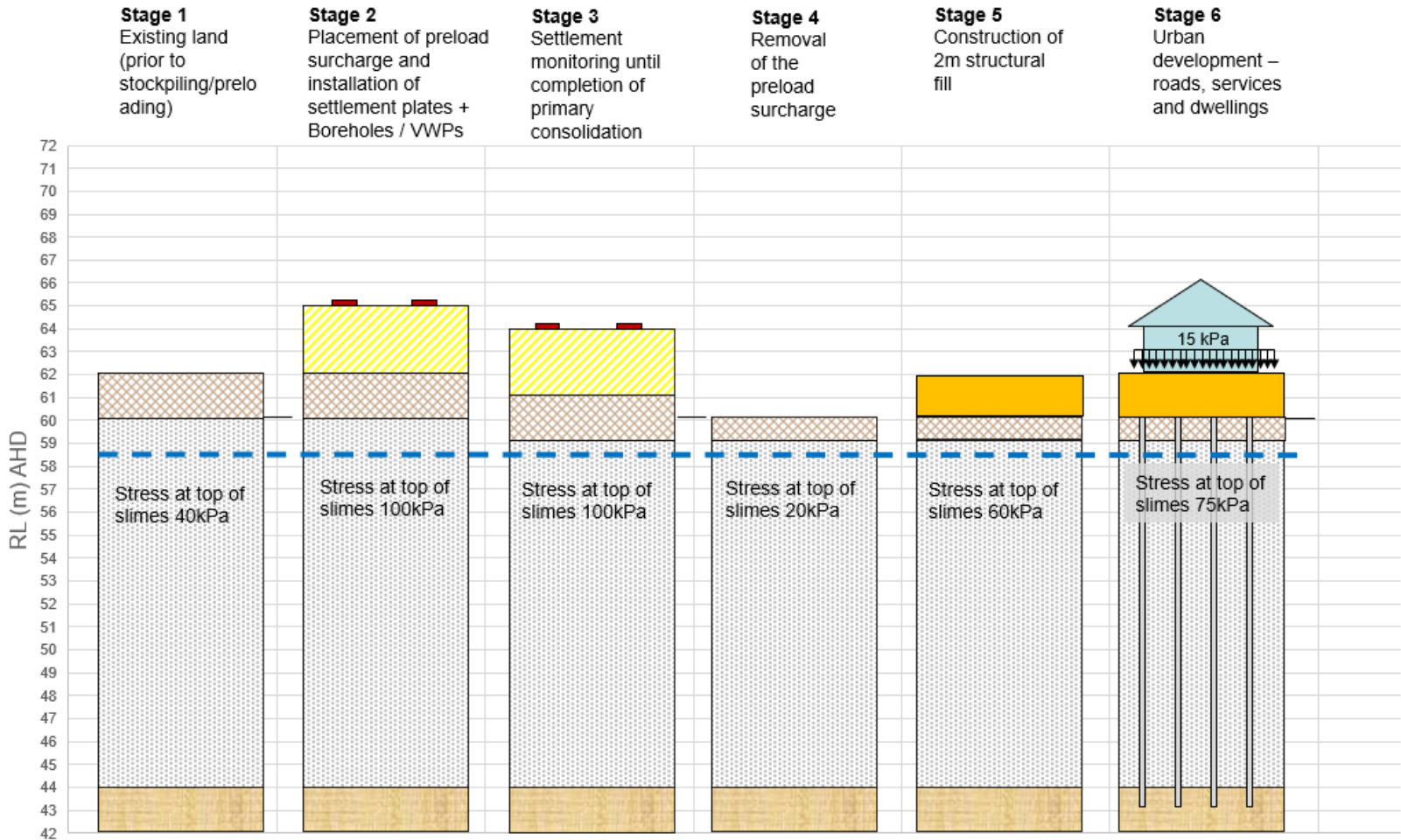
## Primary consolidation

The achieved process that has removed excess water pressure, inducing ground settlement and improved bearing capacity. The can then be built upon with tolerable long term settlement.

## Secondary consolidation

The slower rate of consolidation over a longer period of time. Structures are designed to accommodate the gradual settlement

# PRELOADING PROCESS



## LEGEND

-  New Fill
-  Old Fill
-  Slimes
-  Natural



Structural Fill



Groundwater table



Settlement Plates



Piles to further support structures (if required)

Stages

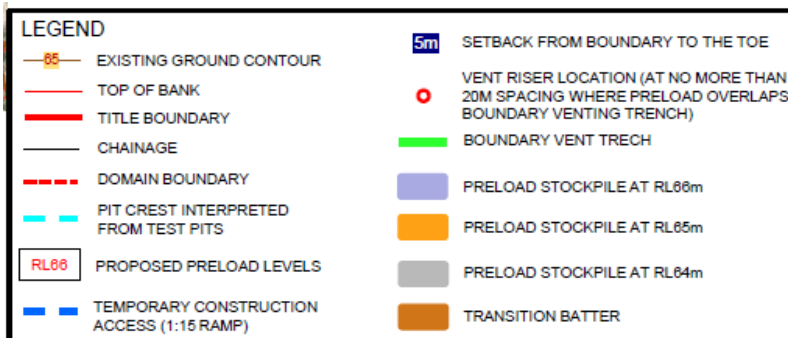
# APPLICATION TP/53179 – PRELOADING TO DOMAIN 1



Sterling Global has applied for a planning permit to undertake preloading works (including a temporary land fill gas ventuing trench) in Domain 1. The application is currently under assessment at Council. The works are to improve the ground ahead of installation the land fill cap and permanent landfill gas venting trenches, and future development of Talbot Village.

Works will involve:

- Removal of vegetation in the workzone including all trees in Domain 1
- Installation of the boundary landfill gas venting trench between the edge of the quarry pit and rear of the Huntingdale Road residential property boundaries
- Importation of clean fill to form the preload stockpile. The stockpile will be set at three different levels in different parts of the domain
- The bottom of the stockpile will be offset 5m from the property boundary
- The landfill gas venting trench will be installed prior to stockpiling works
- The works do not involve excavating in to landfill waste



# CONSTRUCTION WORKS TO DOMAINS 2A, 3A, 3B & 5

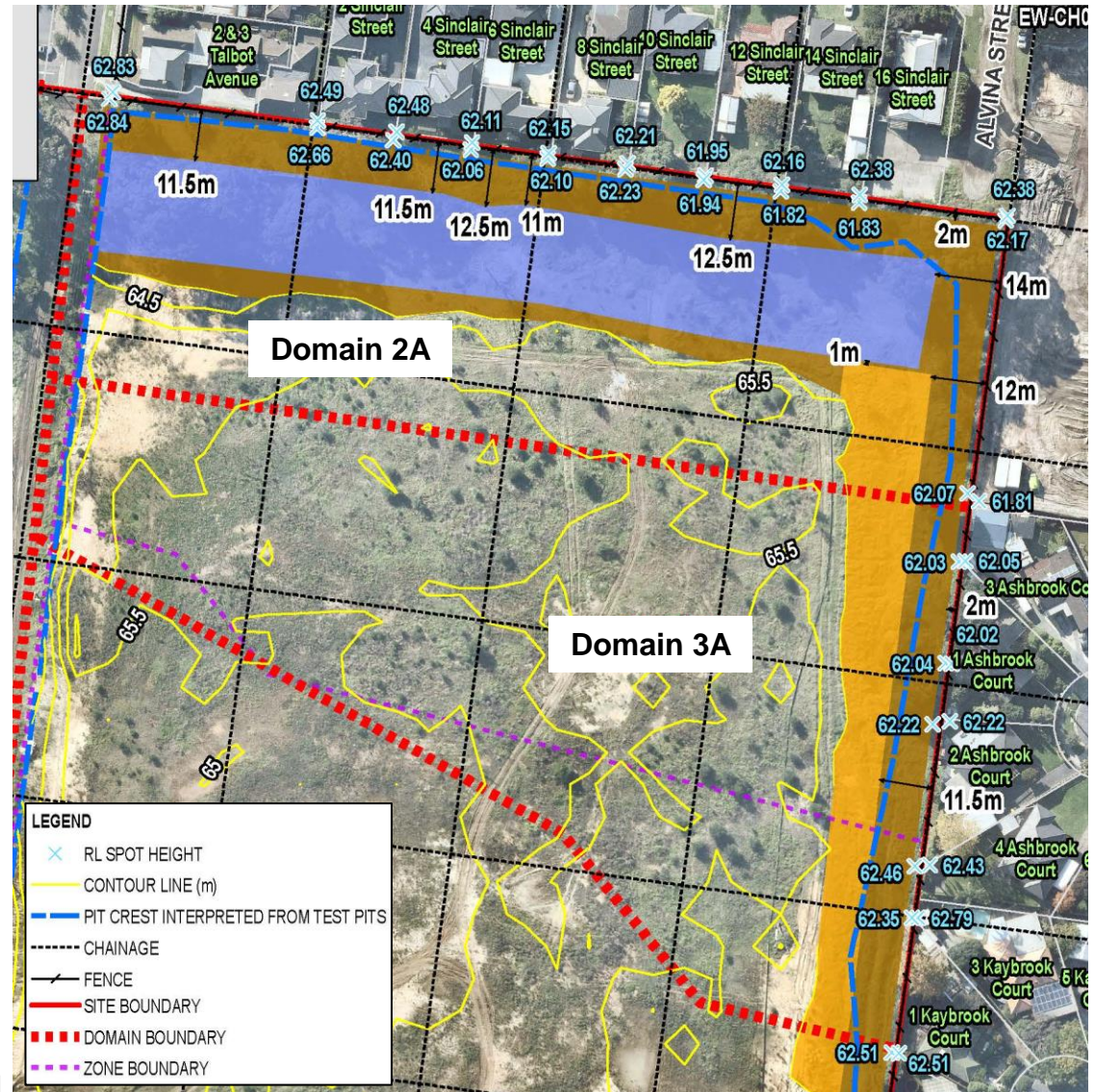
This application is for the following stage of ground improvement works in domains 2A, 3A, 3B and 5. Domains 2B & 6 (adjacent to Hardy Court) are not part of this application.

These domains were largely preloaded during the stockpiling works that took place in 2017-19, generally setback 30 metres from the boundary.

Further geotechnical investigations have established that additional preloading is required along the northern and eastern boundaries to ensure the full extent of the former quarry is appropriately preloaded to prepare the land for future development.

Works will involve:

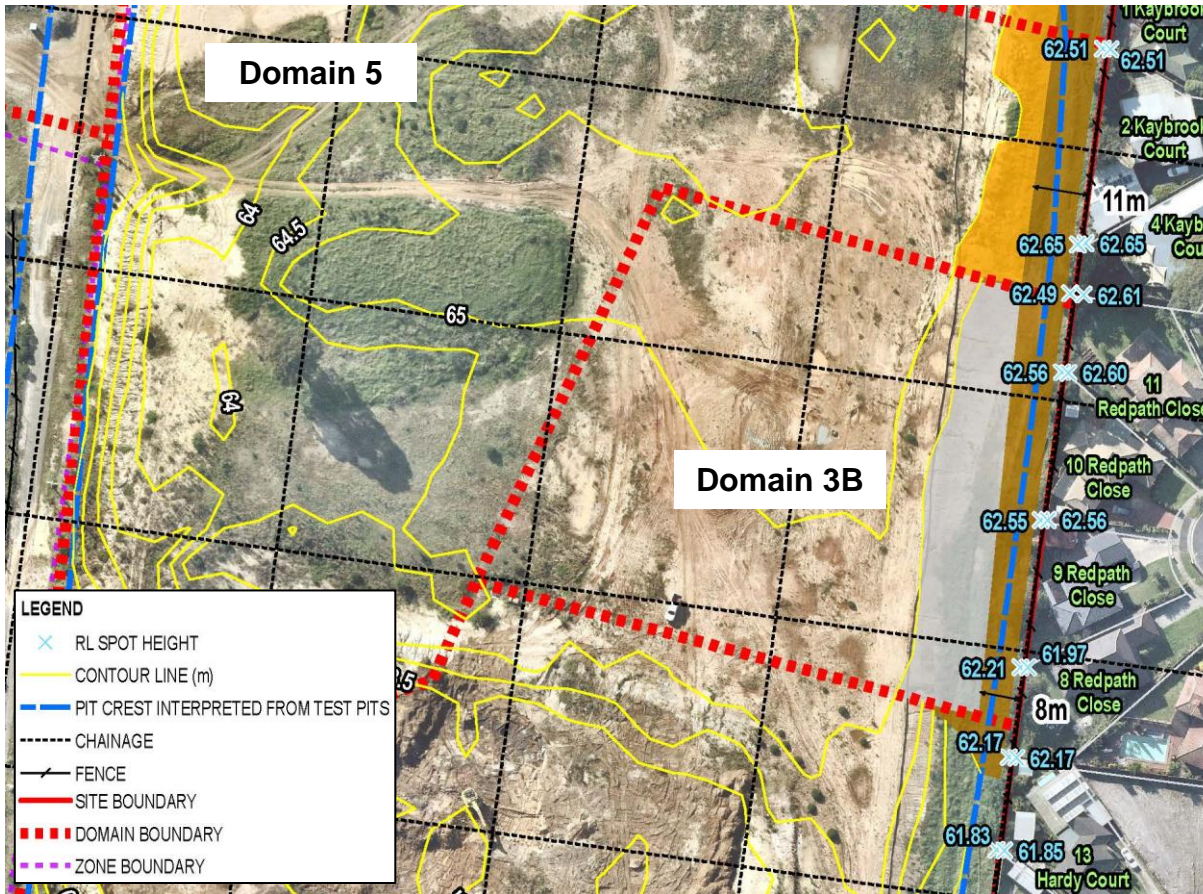
- Removal of vegetation in the work zone including all perimeter trees in the work area
- Importation of clean fill to form the preload stockpile. The stockpile will be set at three different levels due to the natural grade of the land
- The bottom of the stockpile will be offset 2 metres from the property boundary
- The maximum height of the stockpiles are generally setback from the property boundary between 11 to 12 metres (except for Domain 3b which ranges from 8m to 11m)



Stockpiles in Domain 2A and 3A







# CONSTRUCTION WORKS TO DOMAINS 5 & 3B

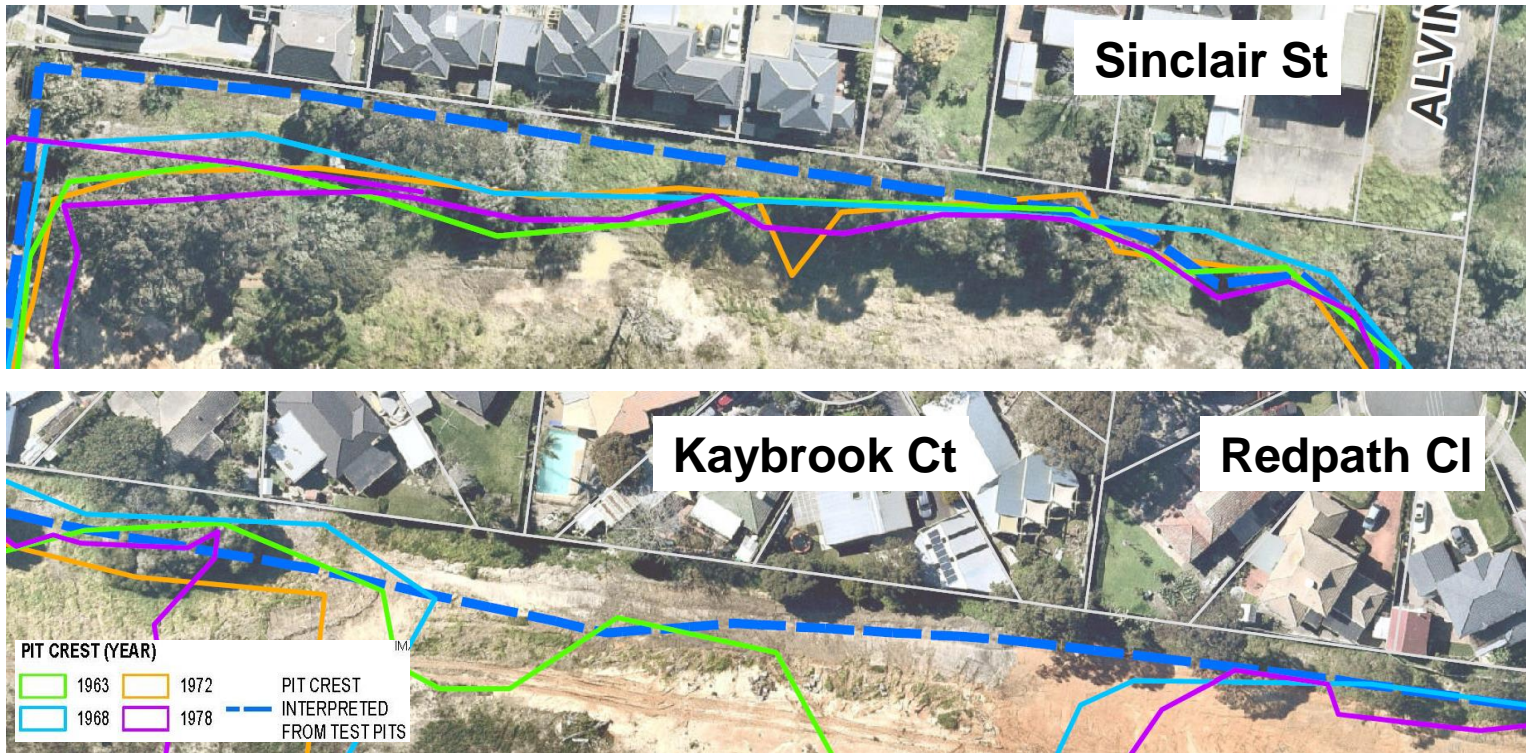


- Stockpiles will be vegetated once built
- Monthly settlement monitoring will be undertaken to track the ground settlement and progress of the preloading
- When primary consolidation of the land has been achieved, the stockpiles can be removed. The stockpiles will be used as backfill material for the filling of the Domain 4 quarry hole. Houses are **not** proposed to be built on top of these preload stockpiles.
- The environmental auditor has determined that there is no requirement for a landfill gas venting trench to undertake these works due to the lack of landfill gas producing material present in these domains, and the distance from the Domain 1 landfill
- Landfill gas conditions at the site are considered unlikely to be impacted by the works. The standard bi-annual monitoring will occur. Should these works occur prior to Domain 1 works, an additional round of LFG monitoring will occur following preloading works
- Works are not expected to have any measurable effect on groundwater conditions and bi-annual monitoring will continue in accordance with the environmental audit

*Stockpiles in Domain 5 and 3B*

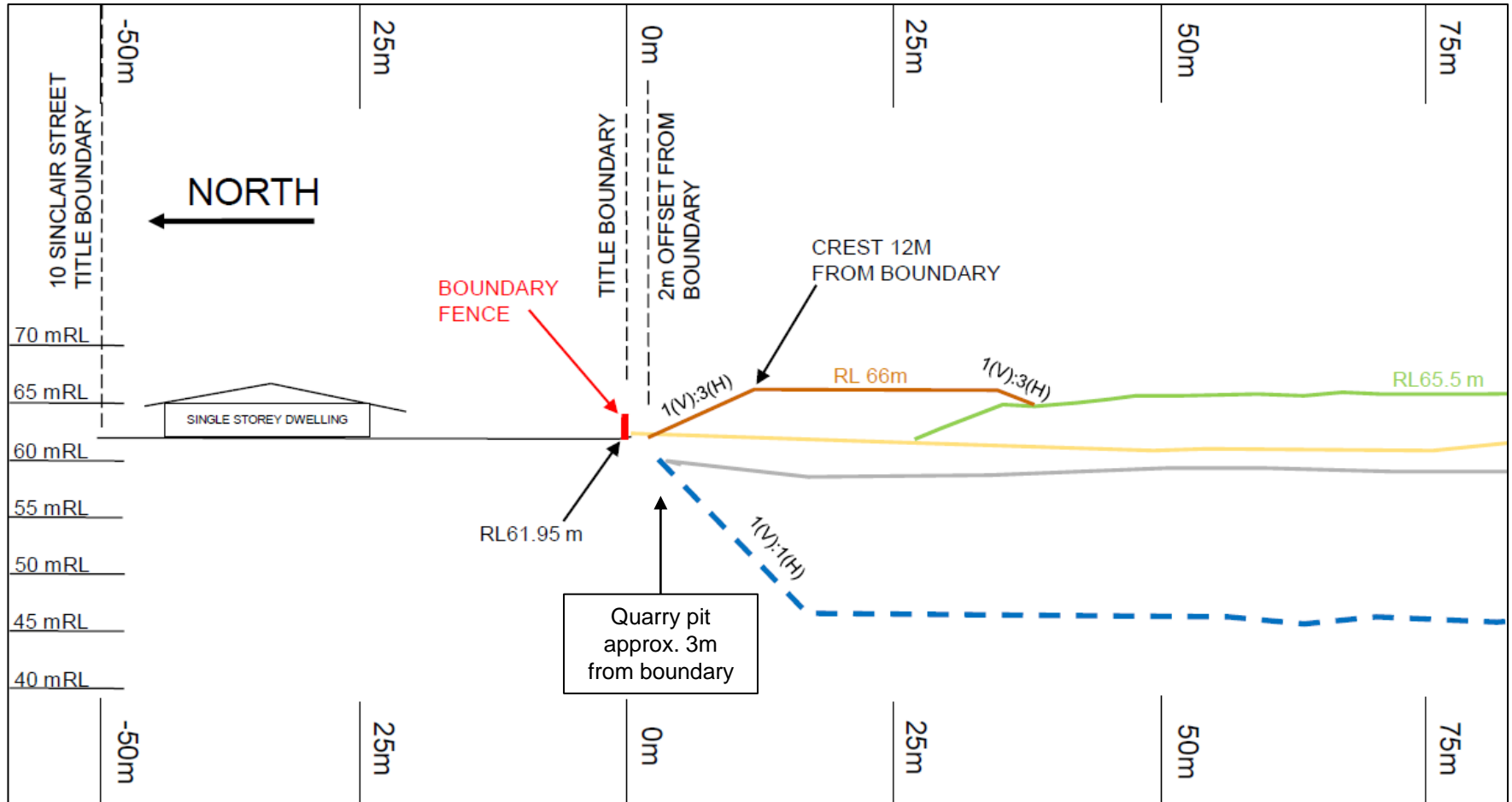
STOCKPILE AND BATTER			
	PRELOAD STOCKPILE AT RL 66M		PRELOAD STOCKPILE AT RL 64.5M
	PRELOAD STOCKPILE AT RL 65M		TRANSITION BATTER 3H:1V

# DESIGN OF THE PRELOAD



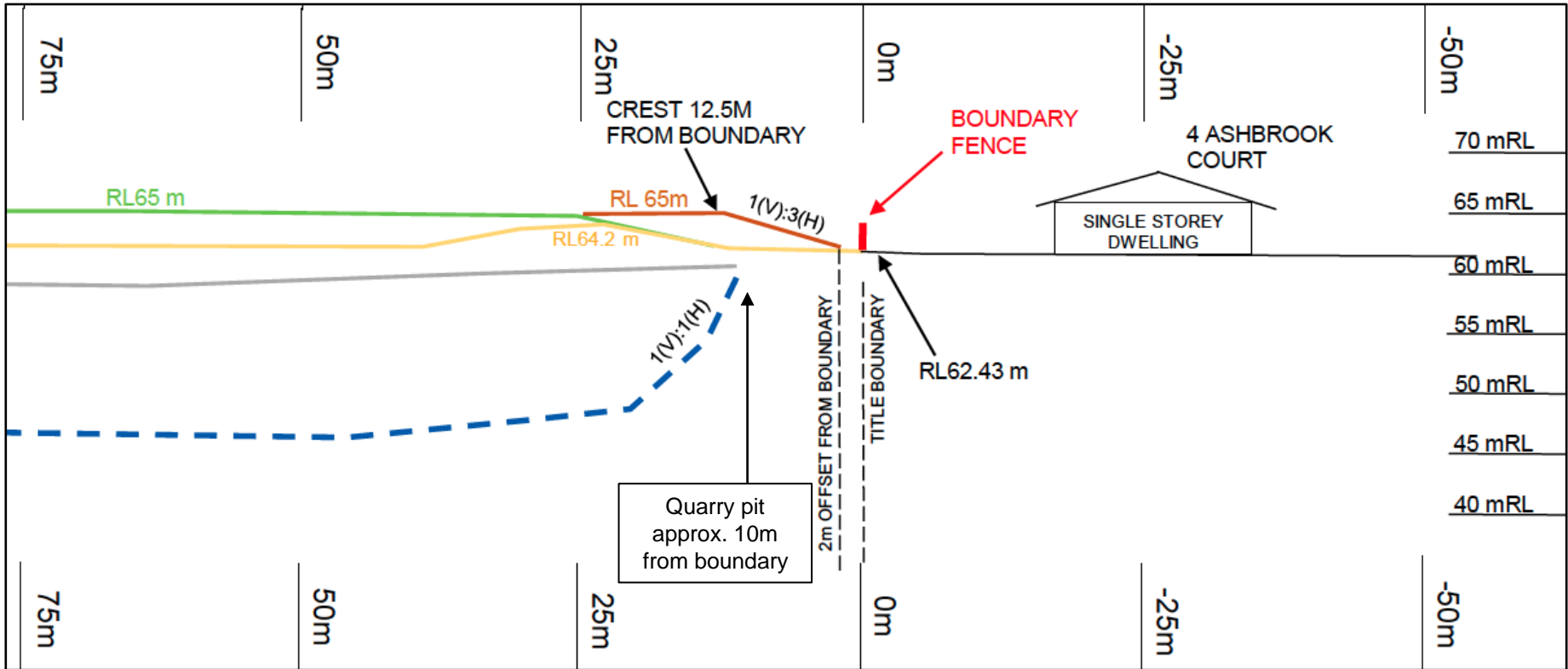
- The quarry hole was excavated generally between 3 and 10 metres away from the site boundary but as close as 2.5m in some areas
- The preload is designed to cover the entire quarry pit as best as possible.
- The full height of the preload should cover the entire quarry pit to create a uniform load to minimise differential settlement.
- Differential settlement occurs when different parts of the site settle at different rates. This could damage new structures built on the land if the site is not adequately preloaded.
- The preload purposefully causes settlement to ensure future settlement is within tolerable levels for future structures. Therefore a uniform preload across the entire quarry pit will minimise differential settlement
- Incorporating a safe stockpile batter, the bottom of the stockpile is setback 2 metres from the boundary, with a swale at the bottom

# PRELOADING IN DOMAIN 2A



LEGEND	
	PRELOAD LEVEL
	TOP OF OLD FILL (APPROX.)
	EXISTING GROUND LEVEL
	TOP OF SLIMES
	TOP OF LANDFILL (APPROX.)
	INFERRED PIT BATTER (APPROX.)

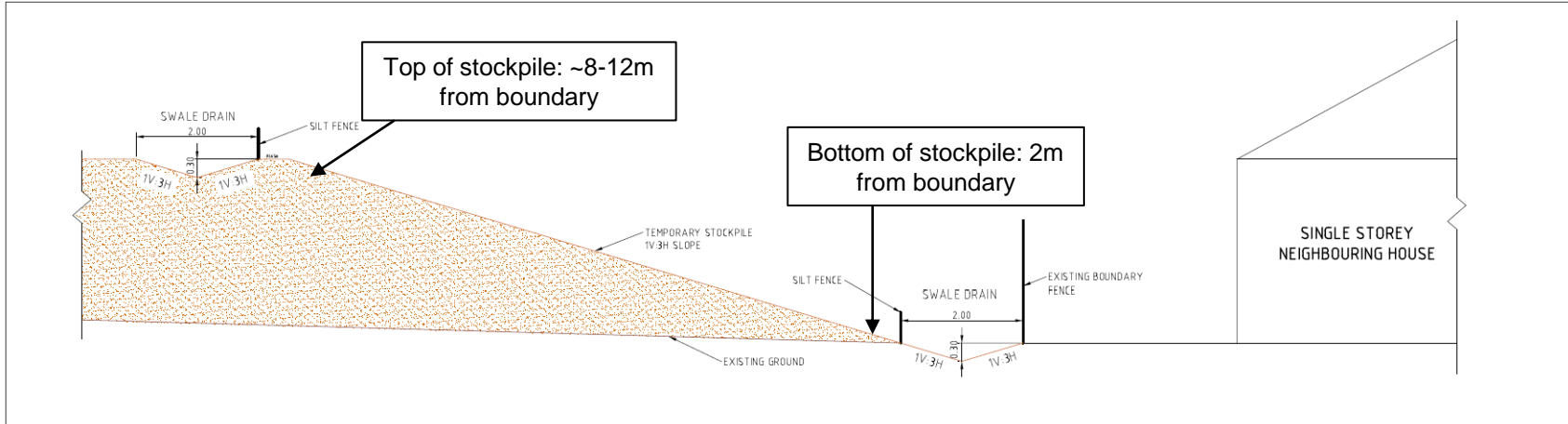
# PRELOADING IN DOMAIN 3B



LEGEND			
	INFERRED PIT BATTER (APPROX.)		PRELOAD LEVEL
	TOP OF LANDFILL (APPROX.)		EXISTING GROUND LEVEL
	TOP OF OLD FILL (APPROX.)		TOP OF SLIMES

*\*Additional sections along the north and east are included within the application material*

# STORM WATER MANAGEMENT



TYPICAL SECTION - SWALES, STOCKPILE AND SILT FENCE ON BOUNDARY

- A swale drain will be constructed around the bottom of the stockpile to capture storm water run off and direct water away from neighbouring properties.

An additional swale will be put in the top of the stockpile.

- Silt fencing will be installed to capture any silt and sediment run off



Swale drains used in residential settings

# PROGRAM AND SEQUENCE OF WORKS

The below represents an indicative program of works. The program is subject to change as works progress and may be influenced by weather or supply chain of preload material. Residents will be kept informed as works progress.

Activity	Likely timeframe
Vegetation removal and site preparation	3 weeks
Importation and construction of preload	2-3 months
Settlement monitoring of preload	12-18 months
Removal of preload	Following completion of settlement monitoring as approved by the geotechnical engineer

Whilst these works are applied for under a separate planning permit, they are part of the overall ground improvement strategy of the site. Subject to planning approval, these works can occur either prior to or following the preloading works in Domain 1.

However, it is planned for these works to occur following Domain 1. Works would generally occur sequentially and not concurrently however some overlap can occur such as vegetation removal and site preparation.

# MANAGING COMMUNITY AMENITY

All works will be undertaken in accordance with the Construction Environmental Management Plan included in the environmental audit.

## Dust

The contractor will take steps to minimize dust as best as possible:

- Minimising vehicle speed on site
- Limiting work on dry windy days
- Water spraying on stockpiles and in works areas to suppress dust
- Application of dust suppressant on completed stockpile areas

## Noise

Unfortunately, noise can be expected during site works. To minimise the impact to adjoining residents, working hours are proposed to be limited to:

- Monday to Friday – 7am – 6pm
- Saturdays – 8am to 12pm
- No work on Sundays or public holidays

Machinery will work efficiently while close to the boundary and limit the amount of time working near neighbouring properties as best as possible.

## Stormwater

The stockpiling involves altering the levels of the land and changing the natural rainwater run off pathways. A swale will be built at the top of the stockpiles to collect and direct stormwater southwards. An additional swale will be provided around the perimeter of the stockpile to direct stormwater away from neighbouring properties

## Traffic

Construction access to the site is proposed to be via Huntingdale Road.



# QUESTIONS?

## Why are there three different stockpile heights?

The natural fall of the land is several metres from north to south. Creating a consistent level would mean the southern portion of the stockpile is taller than necessary. The stockpile will be stepped to three heights to minimise the height.

## Why is the stockpile setback 2 meters from the boundary?

When the quarry was excavated it was constructed generally between 3 and 10 metres from the property boundary. It is important to preload the entire quarry pit as much as practical to minimise differential settlement.

## Why are the trees being removed?

To control stormwater run off from the stockpiles, it is necessary to install a perimeter swale drain at the base of the stockpile. The current trees are located within the area of either the preload of perimeter swale. Trees need to be removed to enable adequate preloading and drainage works. During the development of Talbot Village extensive new canopy trees will be planted.

## Where does the imported material come from?

Typically, the material is brought from the excavation of soil from other building projects such as basements, level crossing removals, tunnels and freeway upgrades.

## Will there be a landfill gas venting trench?

The environmental auditor has determined that there is no requirement for a landfill gas venting trench to undertake these works due to the lack of landfill gas producing material present in these domains, and distance from the Domain 1 landfill.

## What checks occur to the material?

Before importation all fill material is screened, processed and checked in accordance with the Site Backfill Protocol which is endorsed and included in the Statement of Environmental Audit.

## When will works begin?

The works are subject to Council planning approval however we anticipate works to commence in late 2022/early 2023.

## How long will the works take?

It is expected that it will take up to 4 months to prepare and construct the preload stockpile. This is dependent on the weather and other programing factors.

## How long will the preload stockpile remain?

The stockpile needs to remain until primary consolidation is reached and future settlement will be in tolerable limits for future buildings. This will be monitored monthly. It is expected to be 12-18 months.

## What happens to the stockpile after it is removed?

The stockpile will be used as backfill material for the filling of the Domain 4 quarry hole. Houses are **not** proposed to be built on top of the preload stockpiles

## How can I stay involved?

For the duration of the works, Sterling Global will chair a Community Reference Group (CRG) which will help the community understand what's happening during construction and provide us local perspective to help us manage construction impacts. Local residents will be invited to express their interest prior to works commencing and meetings will be held regularly.



# STAGED PLANNING PERMITS

Extensive geotechnical investigation and design work has led to an overall geotechnical development and ground improvement strategy being formed for the site.

Ground improvement works will be applied for, and carried out in stages, however all design work takes into consideration any impact potential impact between zones/domains.

It is planned that there will be 5 planning permits for ground improvement and environmental management works at the site

Planning Application	Status	Commencement of works (subject to planning approval)
Preloading Domain 1 (including LFG venting trench)	Application made – under Council assessment	Mid/late 2022
Preloading Domains 2A, 3A, 3B & 5 (perimeter works)	Application made – under Council assessment	Late 2022/early 2023
Backfilling Domain 4 and removal of preload stockpiles in other domains. Importation of structural fill material	Application to be made approx. late 2022	Mid/late 2023
Preloading Domains 2B & 6	Application to be made approx. early 2023	Mid/late 2023
Landfill cap and LFG trench	Mid/late 2023 – subject to rezoning/development approvals	TBC – subject to rezoning/development approvals
Urban redevelopment (roads and buildings)	TBC – subject to rezoning/development approvals	TBC – subject to rezoning/development approvals

# MEANING OF TERMS

## **Slimes**

Ground with poor geotechnical strength, similar to Coode Island Silt (as found in central Melbourne). Requires ground improvement to increase strength prior to development of new buildings.

## **Preloading**

Placement of fill to accelerate consolidation settlement of the land and improve geotechnical strength to enable development.

## **Settlement monitoring**

The period of time the preload remains on the land and monitoring of the settlement and confirmation of ground improvements to decide when construction can occur.

## **Unloading**

Removal of the preload fill and placement in Zone 4 quarry void

## **Structural fill**

Following removal or preload and existing fill, replacement with structural fill platform to new ground level in order to support future roads and buildings.

## **Landfill cap**

Engineered cap on top of the former landfill in accordance with the Statement of Environmental Audit

## **Civil works**

First stage of urban development, roads and services, prior to construction of buildings

# OVERALL PROGRAM

Works will occur across the site in stages. The below outlines an indicative timeline of the ground improvement and site preparation works.

All works are subject to Council approval and geotechnical sign off to proceed to the next phase. Sequencing the program is indicative only and subject to regular review as the planning process progresses.

