CONSTRUCTION MANAGEMENT PLAN

Sunfield Development

Ardmore, Auckland

CIVIL ENGINEERING ▼ SURVEYING ▼ LAND DEVELOPMENT

PROJECT INFORMATION

CLIENT:	Winton Land Limited
PROJECT:	215010

DOCUMENT CONTROL

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1. PROJECT OVERVIEW

1.1 INTRODUCTION AND BACKGROUND

This Sunfield Developments Limited (**SDL**) is proposing to consent a contiguous 244.5-hectare (ha) site to allow the development of a master planned community to be known as "Sunfield", (the **Site**).

This Draft Construction Management Plan(DCMP) has been prepared by Maven Associates to provide an indicative template in support of the Sunfield development application under the Fast Track Approvals Act 2024.

1.2 SITE DESCRIPTION

The site is located over several land tiles and is indicatively shown on the areal photo below. The site is bounded by Old Wairoa Road to the south, Cosgrave Road to the west and Airfield Road to the north.

The current land zoning for the Site comprises approximately 57ha of land identified as Future Urban Zone (**FUZ**) and 187ha as Mixed Rural Zone (**MRZ**) under the Auckland Unitary Plan (**AUP(OP)**).

Figure 1: Aerial Photo (indicative extent of Sunfield Master plan shown in red outline)

1.3 PROPOSAL

The proposed development of Sunfield is a large-scale master-planned community, consisting of approximately 4,000 residential lots, and approximately 56.5ha of industrial/employment land. In addition to residential and industrial use, other uses to support a new community of this size are proposed, such as, a town centre, health care, aged care, local hubs, a school, parks/open space, stormwater reserves and green connections/shared pathways. The Sunfield development concept plan is shown in the Figure 2 Below.

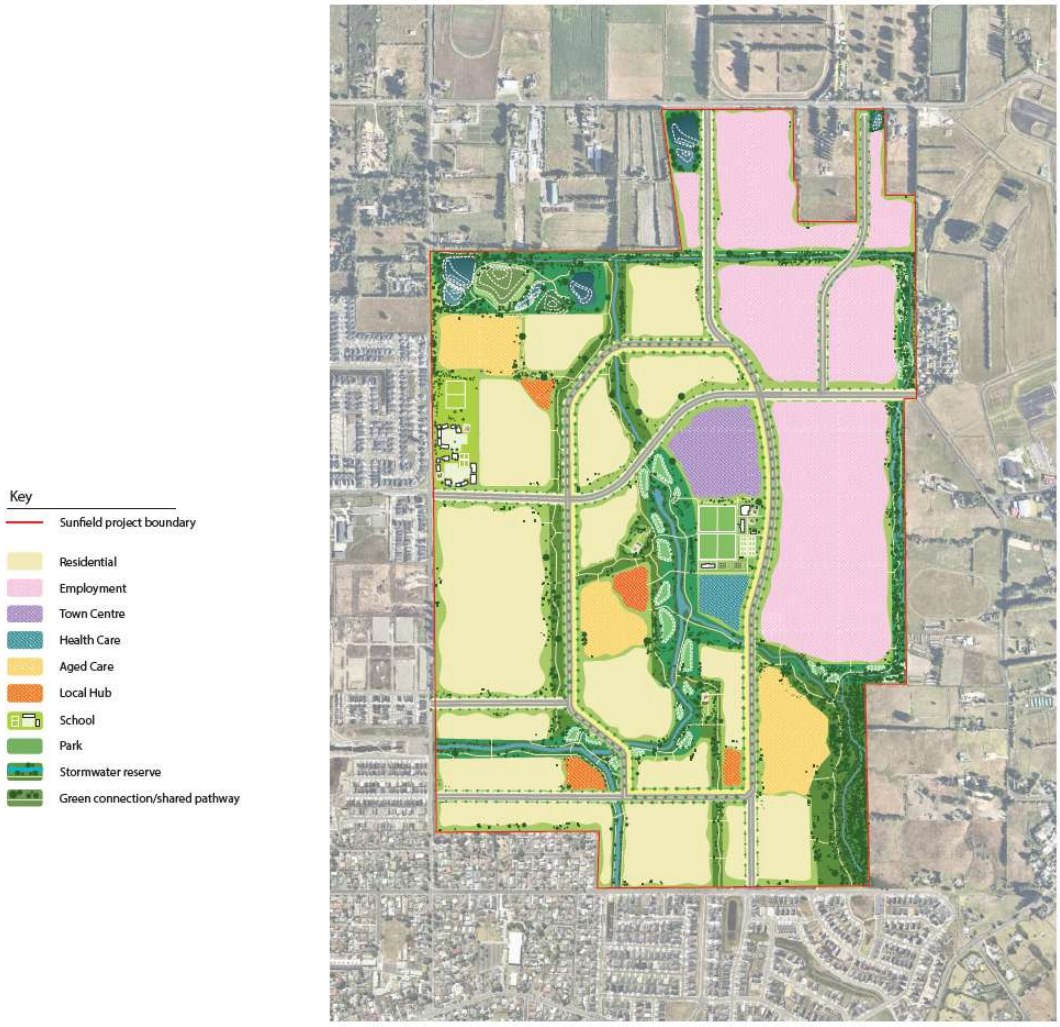

Figure 2: Sunfield Concept Masterplan

1.4 PURPOSE

This DCMP is a preliminary document created on request of the Environmental Protection Authority to provide an example of how the process for managing effects of construction are implemented before the selection of a contractor.

There will be multiple contracts awarded over the course of the development of Sunfield, these will include but not be limited to:

1. Bulk Earthworks
2. External Watermain upgrades
3. External Wastewater upgrades
4. External Road upgrades
5. Internal Stormwater Conveyance
6. Internal Civil Subdivision construction
7. Landscape construction
8. Low rise vertical construction

The contractors will be chosen through a tender process, and once selected, the specific responsibilities and tasks outlined in this DCMP will be adapted relevant to the scope of works and updated accordingly by the contractor.

1.5 SCOPE

The scope of this DCMP discusses the key aspects relating to the construction of the Sunfield Development, and includes as follows:

- Extents and Staging
- Site constraints
- Construction methodology
- Extent of earthworks
- Construction management
- Construction Effects & Mitigation Measures

The scope of work will be finalized and updated once the contractor is selected.

1.6 PROJECT EXTENT AND STAGING

Due to the scale of works the project will be undertaken in stages. The order of staging will be dependent on the relevant infrastructure required at each stage of the project as outlined in the Sunfield Infrastructure Report prepared by Maven. The indicative staging of the proposed Superlots is shown below in Figure 3.

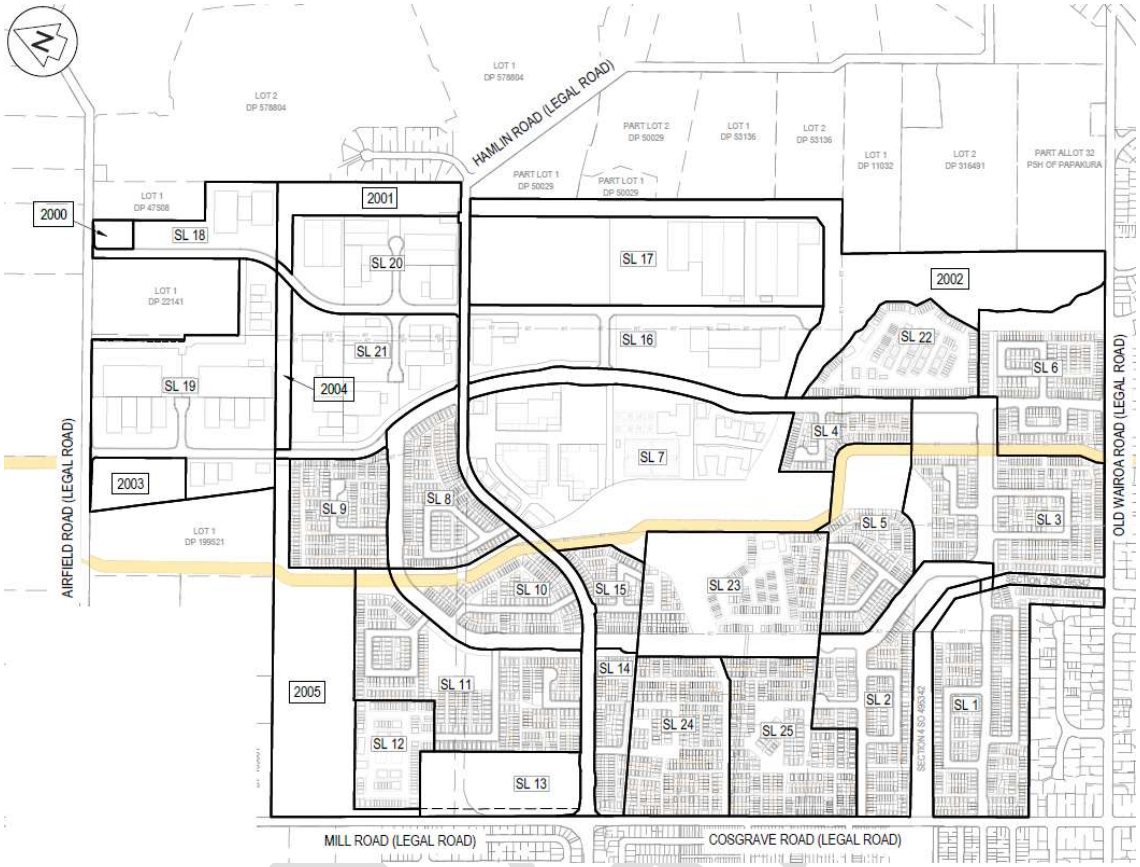

Figure 3: Sunfield Concept Superlot Staging Plan

1.7 GEOLOGY

The geology of the site was assessed by Land Development Engineering (LDE) and is explained in detail in the LDE Geotechnical Assessment Report dated December 6 2024.

Overall, the landholding is considered suitable for urban intensification as has been done on other topographically large land holdings to the west in similar geologies. Further site investigation, and/ or design analyses will be complete prior to commencing any earthworks.

2. CONSTRUCTION METHODOLOGY

The following section is a draft indicative methodology for the construction activity required to construct the Sunfield Development. Once a contract is awarded, the chosen contractor will provide a final construction methodology.

METHODOLOGY

The following outlines key points of the proposed works to complete construction at Sunfield development:

1. Notifications, Approvals and Permits.
2. Site establishment: Secure and prepare the construction site, including necessary infrastructure provisioning and access routes.

3. Health and Safety implementation: establish and maintain stringent health and safety protocols and controls for the numerous and varied workstreams for the project duration.
4. Sediment and Erosion Control: Implement measures to prevent sediment generation and erosion, ensuring environmental protection and compliance with regulations.
5. Traffic Management measures to be implemented as per approved Traffic Management Plans.
6. Works management in close proximity to the Waikato No.1 watermain and associated fibre optic cable.
7. Works management in close proximity to the First gas pipeline.
8. Utility Protection and support - Service Location and Verification: Identify, verify, and confirm existing services within the works area.
9. Site Survey and Set Out: Conduct a thorough site survey and set out the construction area to ensure accurate placement of infrastructure.
10. Staged Erosion and Sediment Control measures
11. Staged bulk Earthworks
12. Stage External Infrastructure Upgrades
13. Staged Swale & Channel infrastructure construction
14. Staged secondary water infrastructure construction
15. Staged roading infrastructure construction
16. Staged residential subdivision development
17. Staged low-rise commercial and residential vertical development
18. Site Dis-establishment: Demobilize from the site, stabilising exposed earth and establishing permanent planting.

2.1 EROSION AND SEDIMENT CONTROL

All earthworks within the Site are supported by measures for erosion and sediment control to ensure all adverse effects from stormwater runoff during earthworks are mitigated.

The site is mostly very flat topography which will result in significant areas of impoundment during rainfall events.

It is envisaged that pumping of stormwater will be required to manage the run-off from rainfall events and the high groundwater levels present at the Site.

Proposed measures for erosion and sediment control have been designed in accordance with Auckland Councils design manual 'GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region'.

Silt control measures will need to be installed onsite prior to the earthworks commencing. All silt control measures will be checked and confirmed acceptable by the Engineer before works commence.

During earthworks, the sediment control measures will be maintained such that they function as proposed.

Silt control measures will only be removed once the site is considered stable in terms of silt run-off by Auckland Council and the Site Engineer.

The following system of erosion and sediment control protection measures are proposed:

Erosion Controls

The site is relatively flat and due to the site contained peat soils, erosion control is limited to diversion bunds to stop rainwater entering/ leaving the site. The bunds allow for the localized ponding (impoundment) of rainwater on the site which can then be managed by pumping or directing to treatment devices as required. The impounded rainfall will also recharge the peat soils to maintain consistent groundwater levels.

Clean Water Diversion Channels and Bunds: These measures are used primarily to intercept and convey runoff to stable outlets. Clean water diversions intercept clean water away from the works area. Erosion damage potential is minimised by reducing the volume of water flowing over the site. This also then reduces the potential for sediment generation and the size of sediment-control devices needed.

Dirty Water Diversion Channels and Bunds: Dirty water diversions convey sediment-laden water within the disturbed area and direct it to a sediment-retention device to enable it to be treated or allow localized ponding of rainwater.

Sediment Controls

Stabilised Entrance: A stabilised vehicle entrance will be formed stabilised to minimise potential for sediment to leave the site with construction traffic.

Progressive Stabilisation: The site will be progressively stabilised as areas of earthworks are completed. This will be undertaken by hay mulching or grass establishment.

Sediment Retention Ponds (SRPs): Where clay is present on-site, SRPs are proposed as a temporary storage and attenuation device. These devices will chemically treat the sediment laden water and will prevent the site from discharging suspended sediments into the receiving environment. Treated water will be discharged from the SRPs into existing drains and watercourses within the Site. Dirty water diversion bunds will direct runoff towards the proposed SRPs.

Decanting Earth Bunds (DEBS): DEBs are a smaller version of an SRP and can be installed quickly and efficiently. They have the same rainfall activated treatment systems as SRPs but the catchment area they can treat is limited in size.

Silt Fences: Silt fences can be used as a barrier to contain runoff flows and trap sediment laden water, these are particularly useful on flat land where runoff is slow.

2.2 SWALE CONSTRUCTION METHODOLOGY

The construction of channels and swales will follow the methodology outlined below. A detailed contractor methodology will be submitted to the Council before work begins.

1. Fish Relocation

- Fish relocation will be carried out before construction starts.

- A Fish Relocation Plan has been developed and will be submitted to the Council for approval before works commence.

2. Diversion Channel/Swale Construction

- The diversion channel/swale will be excavated, and any proposed culverts installed.
- Temporary earth plugs will be left at both ends to prevent water ingress/egress.
- The new channel/swale will be designed to accommodate a 1% AEP storm event.
- Once excavation is complete, the channel will be stabilized before opening.
- Downstream plug will be removed first, followed by the upstream plug, allowing a controlled water flow transition.

3. Upstream Non-Erodible Dam Installation

- A non-erodible dam will be installed at the upstream end of the existing channel.
- If constructed from compacted earth, it will be stabilized with geotextile fabric for scour protection.
- Sandbag coffer dams may also be used as an alternative.

4. Downstream Non-Erodible Dam & Drainage

- A downstream dam will be installed to prevent backflow into the construction area.
- Remaining water in the existing watercourse will be pumped to a sediment retention pond.
- The existing drain will be backfilled and stabilized, and old culverts removed.

5. Final Flow Transition & Restoration

- The downstream dam will be removed first, allowing water to return to the original channel.
- The upstream dam will then be removed, and both ends of the diversion channel will be backfilled with non-erodible material.
- Any sediment-laden water will be pumped to a sediment retention device for treatment prior to discharge.

2.3 EARTHWORKS SUMMARY

Earthworks are necessary to prepare the site and support infrastructure construction. The proposed works cover 244 hectares, involving cut and fill operations to establish finished ground levels.

Earthworks Overview (Based on Modelling by Maven Associates):

- Total disturbed area: 244 ha
- Maximum depths: 18m cut, 6m fill
- Fill required (excluding preload): 1,490,000 m^3
- Total cut volume: 1,700,000 m^3
- Bulk cut-to-fill (after 0.8 compaction factor): 1,360,000 m^3
- Cut-to-fill for drainage/services: 100,000 m^3
- Total earthworks volume (cut + fill): 3,290,000 m^3

- Net fill import required: 30,000 m³
- Preload material import (one superlot at a time): 100,000 m³

The earthworks plan will be further refined during detailed engineering design to achieve a more balanced cut and fill and to inform the extent and scale of pre-load consolidation that is required.

3. CONSTRUCTION MANAGEMENT

3.1 SITE ACCESS, CONTROL & SECURITY

- Fencing: The contractor(s) will finalize the fencing plan once selected. Temporary fencing will be installed along the west, south, and east boundaries, with secure gates. The north boundary adjoins an existing property with secure fencing, which will remain in place. Specific details regarding security measures will be confirmed by the selected contractor for each phase of works.
- Access and Control: The site access and delivery plan will be finalized by the contractor. Specific details regarding the site amenities and notification strategy will be confirmed by the contractor upon selection. The contractor will also manage the hazard register and monitoring of the site entry and exit points.
- Parking: Onsite parking will be provided, and no parking will be allowed on local roads or public parking spaces. The selected contractor will be responsible for finalizing and implementing a parking plan.
- Signage: Specific signage, including hazard notification, PPE requirements, authorized entry, and site contact information, will be confirmed by the selected contractor. The contractor will be responsible for ensuring that all barriers, fencing, and signage are clearly visible and properly maintained during the construction process.
- Security & Storage: The contractor will ensure that the site, buildings, vehicles, tools, and equipment are secured to prevent unauthorized access. Specific security measures, including the use of padlocks and recorded surveillance, will be confirmed once the contractor is selected. The contractor will also be responsible for securing and storing materials, equipment, and machinery onsite.

3.2 PROGRAM MANAGEMENT

The contractor will provide a detailed program showing critical items that will be frequently monitored and updated. This will include the availability of labour and materials. Construction progress will be monitored and communicated by the contractor, with frequent program reviews.

3.3 TRAFFIC & PUBLIC SAFETY

The contractor will finalize traffic and public safety measures once selected. During the progress of the works, the contractor will ensure that all public streets, car parks, and footpaths affected by the project are kept clean and clear of obstruction. Specific details regarding signage, barriers, and any traffic management will be determined by the contractor.

The contractor will develop a traffic management plan (TMP) to ensure public safety, including managing pedestrian traffic around the site, ensuring clear signage is placed to direct pedestrian and vehicular movements, and complying with the Traffic Management Plan (TMP) for safe diversion of pedestrians when necessary.

3.4 CONSTRUCTION DISTURBANCE

To minimize noise and disturbance to surrounding residents and the public, the contractor will:

1. Identify potential disturbances and develop a mitigation plan.
2. Consult with neighbours to discuss construction activities and share the timing and expected impacts.
3. Notify stakeholders about construction hours and provide contact details for the site manager.
4. Construction hours will be from 7:30 am to 6:00 pm, Monday to Saturday, with noise restrictions before 8:00 am and after 5:00 pm.
5. Onsite parking will be managed by the contractor. The contractor will finalize and implement parking arrangements relevant to the scope of works.

Traffic management measures will be updated and implemented by the contractor.

3.5 ENVIRONMENTAL MANAGEMENT

The contractor will develop and implement all necessary environmental measures to comply with the Resource Management Act (RMA) and any relevant resource consents.

- Air Quality: A Dust management strategy will be developed and implemented by the contractor. The goal is to ensure that there is "no dust beyond the site boundary that causes an offensive or objectionable effect."
- Runoff Quality: Sediment control measures will be implemented according to the Erosion and Sediment Control Guidelines (GD05).
- Wastewater Management and Rubbish: The contractor will confirm the details of waste management, including providing portable chemical toilets and ensuring wastewater is not discharged into any stormwater drainage system. The contractor will also manage the removal of construction rubbish at the end of each workday.
- Oil and fuel spills: The contractor will finalize procedures for managing the risk of oil and fuel spills. The likely measure for containment is earth bunds and emergency spill kits
- Vibration: The contractor will manage vibration risks associated with construction equipment and implement necessary mitigation measures to minimize vibration effects on nearby properties.

3.6 GROUNDWATER & SETTLEMENT EFFECTS

The management of groundwater and settlement effects from earthworks are considered separately under the Groundwater and Settlement Monitoring and Contingency Plan (GSMCP).

3.7 RISK MANAGEMENT

The contractor will provide a comprehensive Health & Safety Risk Management plan, which will include hazard identification, control measures, and a Health & Safety Risk Register to record and mitigate risks. The contractor will be responsible for conducting risk assessments and ensuring that appropriate actions are taken to manage identified risks.

3.8 GROUND GAS MONITORING

Organic soils, such as those encountered at the site, have the potential to produce gasses through aerobic and anaerobic decomposition. Typical peat soils generate methane, carbon dioxide, hydrogen sulphide and other trace organic gasses.

Whilst the volumes generated are likely to be minor, they can be concentrated in pockets within the soil profile where overlying clay soils present a barrier to gas movement. As these confining soils are removed, during activities such as borehole drilling and excavation, small volumes of concentrated gasses can be released. The presence of these gasses is an explosion and asphyxiation risk.

It is recommended that appropriate gas monitoring be undertaken during excavation and construction work exposing organic / peat soils along with the development of suitable hold points to reduce risk of harm.

Consideration may be given to installing in ground gas monitoring to track ground gas generation and movement during construction and dewatering as part of the contractor's methodology.

Ground gas management will be assessed and confirmed by the relevant contractor prior to the start of works and will be outlined in a works specific Construction Management Plan.

3.9 QUALITY ASSURANCE

Once the contractor is selected, they will provide a detailed Quality Assurance Plan, which will outline key work stages and inspection points. The contractor will ensure that all work meets the required quality standards and complies with relevant construction specifications. Inspection, testing, and commissioning procedures will be managed by the contractor, and all records will be maintained to demonstrate compliance with contractual and quality requirements.

4. CONSTRUCTION EFFECTS & MITIGATION MEASURES:

Construction Effects	Mitigation Measure
Noise	1. Construction Noise and Vibration Plan to be compiled and implemented. 2. Compliance with New Zealand Standard 6803:1999 for Acoustics – Construction Noise. 3. Hours of work – 7.30am – 6pm Monday to Saturday. 4. Plant choice – noise effects from certain items of plant will be considered when formulating construction methodology. 5. Plant assignment – The plant with the most noise impact can be restricted in both location and hours of operation. 6. Plant operation – methodology of plant operation can be adjusted to reduce noise impacts i.e. reversing alarms muted, soft closing tailgates and bin closure etc. 7. Acoustic Fencing can be erected in the more vulnerable area.
Vibration	1. Construction Noise and Vibration Plan to be compiled and implemented. 2. Compliance with Appendix B of DIN 4150-3:1999 *"Structural vibration – Part 3 Effects of vibration on structures"* 3. Geotechnical advice – understanding ground conditions and ground acceleration properties 4. Monitoring – vibration monitoring can be undertaken on surrounding structures if deemed necessary.

	5. Plant choice – vibration effects from certain items of plant will be considered when formulating construction methodology. 6. Plant assignment – the plant with the greatest impact on ground vibration can be restricted to certain areas of operation
Water Quality	1. Adaptive Environmental Monitoring and Management Response Plan (AEMMRP) – A plan to set out the process of managing earthworks to effectively control the impacts of erosion and sediment mobilisation during construction. 2. Compliance with Auckland Council Technical Publication GD05 Guideline. 3. Chemical Treatment Plan (CTP) – to be developed and implemented into all treatment devices installed onsite. 4. Rainfall monitoring – an automated real time rain gauge can be installed onsite. 5. Sediment monitoring – both automatic and manual sediment discharge monitoring can be monitored. 6. Accidental Contaminant Spillage – A spill plan and remediation kit to be available on-site.
Dust	1. Construction Management Plan to be compiled and implemented. 2. Monitoring – Weather conditions will be monitored to inform risk. 3. Dust suppressant systems can be implemented using K-Line or standpipe irrigators connected to a reliable source of water. Soaker hoses for stockpiles can also be implemented. 4. Dust suppressant additives can be applied to haul roads or other open areas as required. 5. Haul route maintenance – trimming of haul routes to keep loose material from traffic lanes can be implemented.

	6. Haul route planning – location of haul routes can be planned to lessen impacts of dust generation. 7. Geotextile coverage – stockpiles or temporary work faces can be covered in geotextile to provide dust suppression.
Construction Traffic	1. Construction Traffic Management Plan (CTMP) – to be comprehensive and adaptive to enable minimal disruption to surrounding road users. The CTMP shall be formulated and implemented following the consultation with all other stakeholders. 2. Route planning – once supply locations are confirmed, a route can be planned considering impacts on schools, ECE centers etc. 3. Hours of operation – deliveries to site should consider residual traffic conditions and structure delivery times to avoid times of congestion. 4. Location of ingress and egress – construction entries and exits to consider locations relative to impacts on surrounding residents. 5. Ingress and egress logistics – temporary slip lanes or holding areas off existing carriageways to be considered for bulk deliveries. 6. Traffic management – temporary traffic lights or stop/go controls to be considered where frequent deliveries are likely to impact normal traffic flows.
Groundwater & Settlement Effects	The management of groundwater and settlement effects from earthworks are considered separately under the Groundwater and Settlement Monitoring and Contingency Plan (GSMCP).