

# Appendix 2: Green Island Resource Recovery Park Precinct Design and Operations Report



# Waste Futures – Green Island – Resource Recovery Park Precinct

## Design and Operations Report



EnviroNZ Services Ltd (ESL) and Dunedin City  
Council (DCC)  
19 February 2024

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# 1 INTRODUCTION

## 1.1 Waste Futures Programme

As part of Dunedin's wider commitment to reducing carbon emissions and reducing waste going to landfill, the Dunedin City Council (DCC) has embarked on the Waste Futures Programme to develop an improved comprehensive waste management and diverted material system for Ōtepoti Dunedin. The programme aligns with DCC's responsibility under the Waste Minimisation Act 2008 to 'promote effective and efficient waste management and minimisation within its district'.

Improving Dunedin's whole waste system includes enhancing collection services for reuse and recycling, and safe disposal of residual waste to landfill.

The Waste Futures Programme includes provision of an enhanced kerbside recycling and waste collection service for Dunedin from July 2024. The new kerbside collection service will include collection of food and green (organic) waste.

To support the implementation of the new kerbside collection service, the DCC is planning to make changes to the use of Green Island landfill site (Figure 1) in coming years including:

- Developing an improved Resource Recovery Park Precinct (RRPP) for food and green waste and to process recycling; and
- Providing new waste transfer facilities to enable the safe disposal of any residual waste to landfill

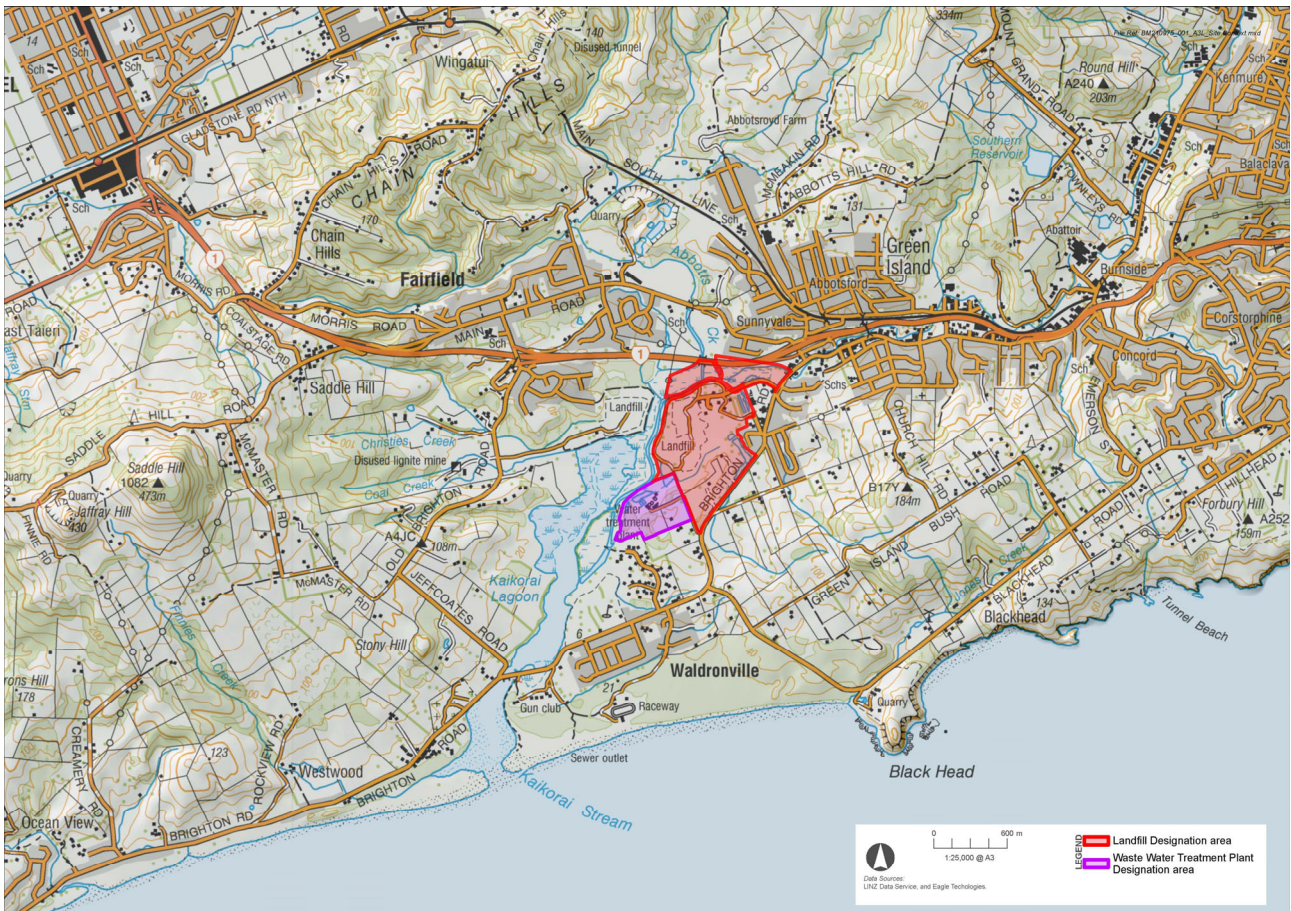


Figure 1 Green Island Landfill and Resource Recovery Park Precinct Site (Designation D658).

In addition, DCC is planning for the ongoing operation and closure of the Green Island landfill, which is coming to the end of its operational life. The existing Otago Regional Council (ORC) resource consents, required to operate a landfill at Green Island, expired in October 2023. In March 2023, DCC applied to ORC for replacement resource consents to continue to use the landfill until it closes completely, and waste

disposal can be transferred to a new landfill facility. These consent applications are in the process of being considered by ORC.

## **1.2 Green Island Resource Recovery Park Precinct (RRPP)**

To meet the requirements of the new kerbside collection service the DCC is investing in improvements and expansion to the existing resource recovery area at Green Island landfill site. Proposed new facilities are shown on Figure 2 and include:

- organic receivals building (ORB) and processing facilities to support the organic waste kerbside collection;
- materials recovery facility (MRF) to sort and bale items collected from kerbside mixed recycling bins; and
- bulk waste transfer station (BWTS) to facilitate the compaction and trucking of waste to landfill.

Additional facilities also include new glass bunkers, staff offices, parking, and breakrooms and associated access roads and truck parking areas. Several existing facilities are to be retained including the Rummage shop, public drop-off areas and the education centre.

The resource consents for the development and operation of the new facilities relate to ground disturbance, and discharges to land and air. The Green Island landfill site is subject to an operative designation (D658) in the Proposed Second-Generation Dunedin City District Plan (2GP) for the purpose of Landfilling and Associated Refuse Processing Operations and Activities.

The RRPP will be run by EnviroNZ on behalf of DCC and will start operating in July 2024 following construction of the ORB, which is currently underway. Resource consent to operate the ORB was granted by ORC in September 2023 under the existing landfill consents.

The other new RRPP facilities are planned to start operating from mid to late 2025.



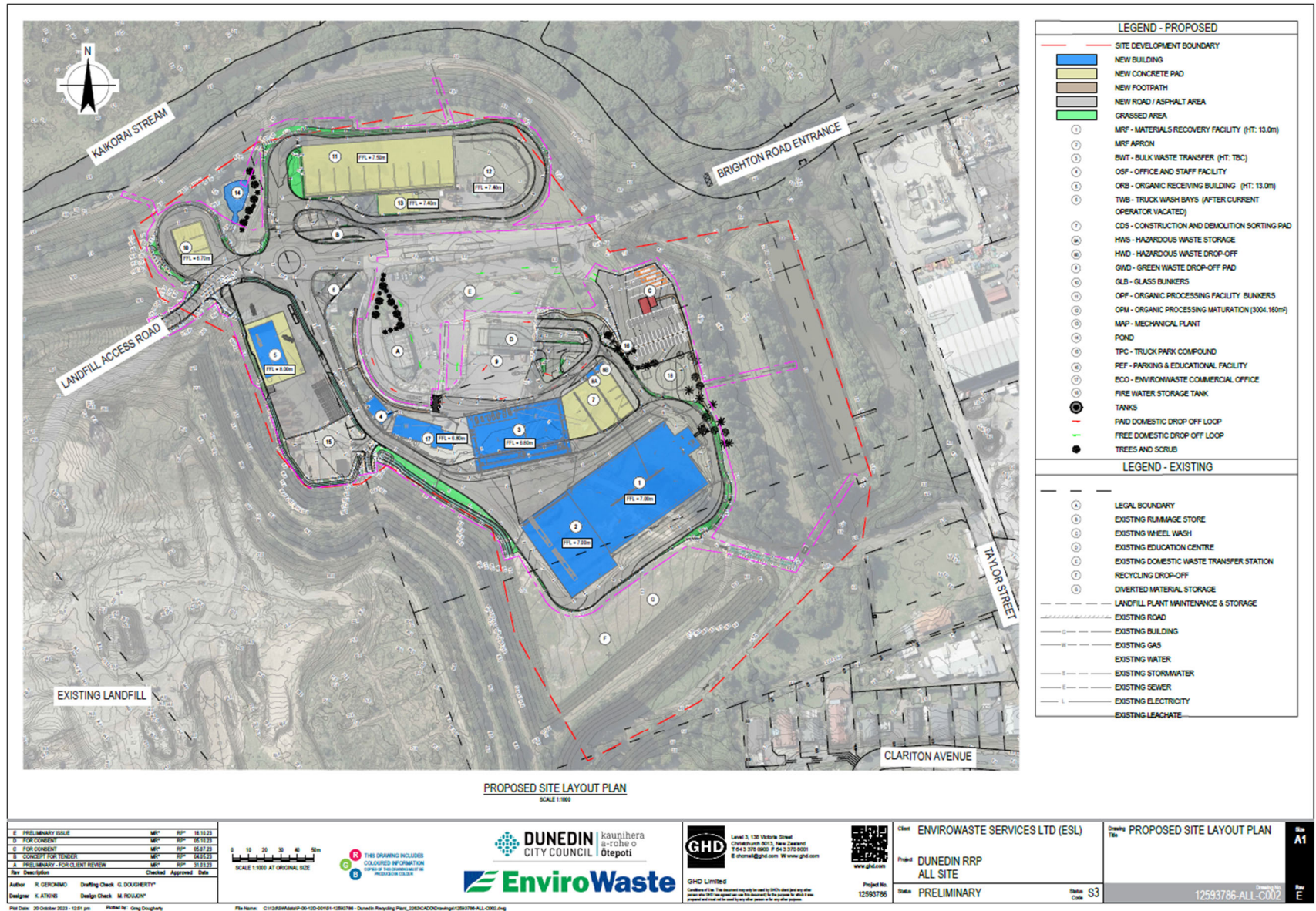


Figure 2 Green Island Resource Recovery Park Development Area Proposed Layout.

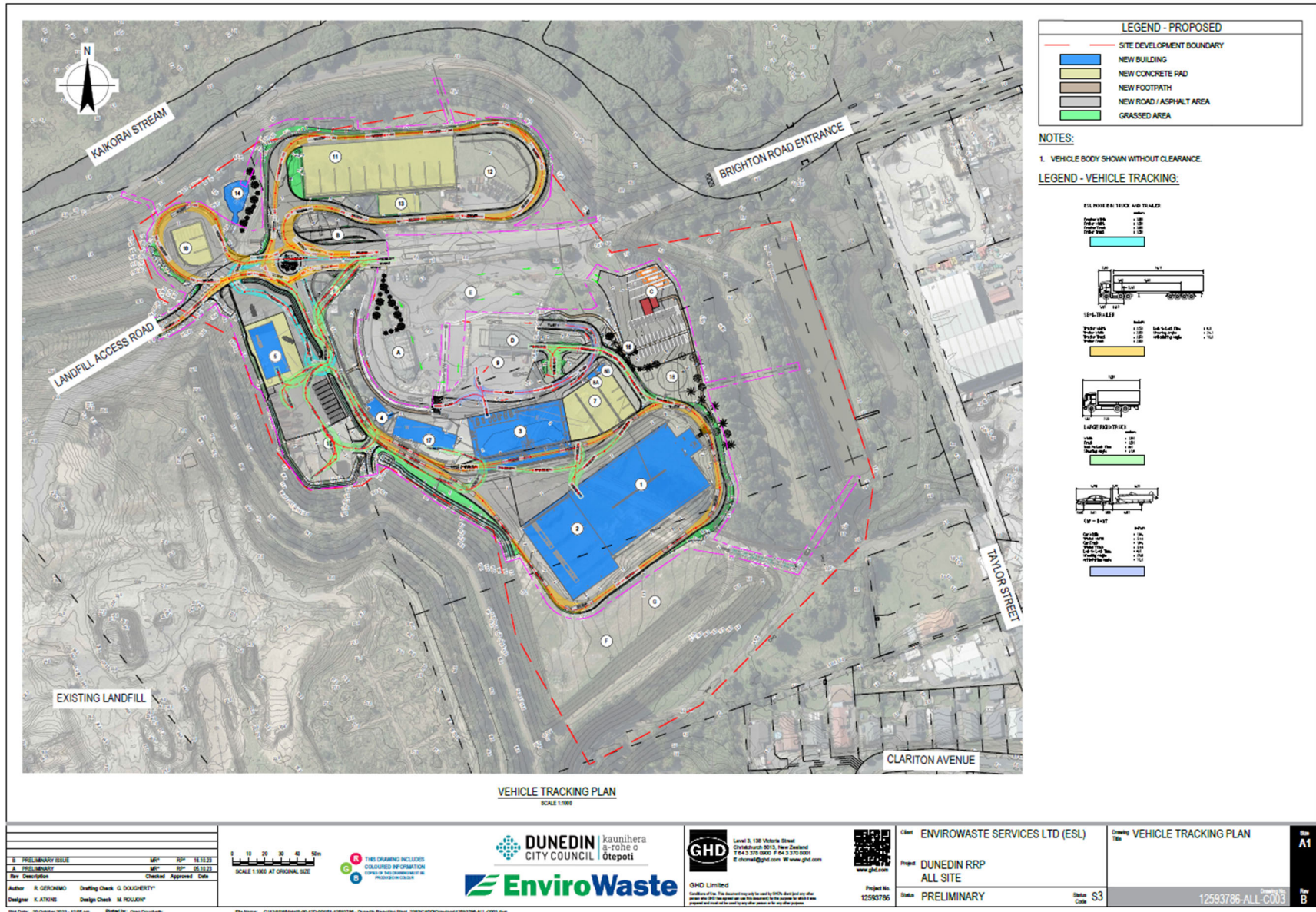


Figure 3 Green Island Resource Recovery Park Development Area Proposed tracking plan.

### 1.3 Purpose of this report

This report is prepared as supporting documentation to the ORC and DCC resource consents and DCC outline plan of works with the purpose of describing the design and operations of the RRPP development at Green Island, Dunedin, proposed to be constructed on the site by July 2025.

### 1.4 Scope and limitations

This report describes:

- General layout and design of each new facility;
- General construction approach;
- Overview of stormwater and leachate management;
- Overview of contaminated land management; and
- Operation of the site (waste journey, hours of operation, truck movements, management of noise, odour, dust, vermin).

The following documents provide further details on the above matters and are attached as appendices:

- Appendix A: Proposed Site Layout
- Appendix B: Site 3D View
- Appendix C: Buildings Layouts

In addition, the following management plans (RRPP Management Plans, GHD 2024E) also provide supporting information:

#### Construction Plans

- A DRAFT Construction Environmental Management Plan
- B DRAFT Erosion and Sediment Control Plan
- C DRAFT Contaminated Land Management Plan

#### Operational Plans

- D DRAFT Operations Management Plan
- E DRAFT Stormwater Management Operation and Maintenance Plan
- F DRAFT Green Island Composting Facility Management Plan

## 2 SITE SETTING

### 2.1 Current Use of the Site

The Green Island site is currently designated as a landfill and is actively used for waste disposal and resource recovery operations. The designation boundary is shown on Figure 1. It is operated by the DCC and its contractors and serves as the primary disposal facility for the region. As a landfill, its primary function is to receive, store, and manage solid waste generated from various sources, including residential, commercial, and industrial activities. This includes current resource recovery operations which are located to the north-east of the landfill footprint but within the designation area (see Figure 1).

The landfill is designed to accommodate different types of waste, including household waste, construction debris, and other non-hazardous materials. It follows specific waste acceptance criteria and waste segregation practices to ensure proper waste handling and disposal.

### 2.2 Site Setting

The landfill and existing resource recovery operations are primarily constructed on the upper parts of the low lying Kaikorai Estuary and while the landfill extends up to a height of 25m above mean sea level (AMSL), the land on which it has been constructed is low lying.

The resource recovery section of the site is also underlain by waste placed in this area during the 1950s to 1970s. Waste in this area is approximately 6 to 8m thick with a layer of capping type material up to 0.3m thick.

### 2.3 Site Locations and Environs:

The Green Island landfill is situated in the suburb of Green Island, approximately 8 kilometres southwest of the Dunedin city centre. The landfill is positioned within a semi-rural setting, surrounded by agricultural land, the Kaikorai stream and lagoon, and industrial and residential areas. The site is accessible via an off-ramp from State Highway 1, facilitating the transport of waste to and from the landfill. The landfill site comprises a total area of 75.6 ha, which is designated in the 2GP for landfilling related activities as shown outlined in Figure 1. Primary access to the site is via Brighton Road on a sealed access road.

### 2.4 Climate:

Dunedin experiences a temperate maritime climate with mild summers and cool winters. The region receives a moderate amount of rainfall throughout the year. The Musselburgh climate station is a NIWA station (ref No. 1572) located 7.5km to the east of Green Island landfill and climate information from the station is indicative of conditions at the landfill site. This includes the following:

- Dunedin receives around 1600hrs of sunshine annually, with average daily maximum temperatures varying between 19 degrees in summer down to 10 degrees in winter.
- Average annual rainfall is relatively low at 750mm per year. The rainfall is generally consistent throughout the year with monthly averages varying between 49mm in September to 74mm in December with between 12-17 rain days/month.
- Predominant winds for the area are westerly with easterly winds being the other main wind direction.

An on-site climate station at Green Island landfill has been established in the past few years and provides site specific information in addition to the NIWA sourced data.

### 2.5 Topography, Geomorphology, Geology, and Groundwater:

The landfill and associated operations are located in the upper (northeast) part of the Kaikorai Lagoon, immediately to the east of the Kaikorai Stream. The Kaikorai Stream flows into the estuary approximately 400m southwest of the site. Prior to landfill development the site would have been characterized by low lying

(1 -2 m above sea level) estuary flats and wetlands. Immediately to the east of the landfill the land rises gently to a series of low hills.

The geology underlying the landfill area comprises sediments of estuarine origin underlain by Abbotsford Formation mudstone. The estuarine sediments, described as Kaikorai Estuary Formation (KEF) (BDGC, 2002), are approximately 11m thick in the landfill area. The KEF was divided into an upper and lower layer (member), with the upper member being further divided into two subgroups.

## **2.6 Groundwater/Leachate Management**

The current groundwater flow patterns are strongly influenced by both the landfill construction and existing leachate collection trench and associated pumping. Rainfall on the landfill and RRPP area that does not run off to the stormwater collection system percolates through the landfill material to the base where it accumulates as groundwater leachate. There is no recognised aquifer under the site.

The low permeability of the underlying layers of the KEF and the Abbotsford formation beneath the waste along with the sub-artesian/artesian groundwater conditions inhibit downward migration of groundwater leachate into the underlying sediments. Mounding of leachate within the waste, and these underlying low permeability layers, results in shallow leachate/groundwater flow outwards towards the perimeter of the landfill and resource recovery area.

The landfill and resource recovery area are almost completely encircled by a leachate collection trench that creates a hydraulic barrier which impedes groundwater and leachate migration offsite. The location of the trench is shown on Figure 4. This is achieved through the continuous dewatering of the trench via a series of pump stations, which pump groundwater impacted by the landfill via a rising main to the Green Island Wastewater Treatment Plant (GIWWTP). In addition, within the cut-off trench is a High-Density Polyethylene (HDPE) liner which was installed on the estuary/stream site of the trench. This liner acts as a further barrier whilst reducing the volume of water/groundwater entering the trench from the Kaikorai Stream. However, it does not completely prevent groundwater seepage from the estuary and stream.

Water levels in the trench are typically maintained at -0.8m to +0.2 m AMSL by the continuous dewatering of the trench. These water levels are lower than the surface water levels, with typical stream and estuary water levels of 2.0m to 2.5m AMSL. Figure 5. shows a schematic diagram of how the leachate trench and pump system operates. Historical and ongoing groundwater level monitoring within monitoring well arrays which run perpendicular to the trench demonstrates that the leachate trench system is effective at intercepting shallow groundwater flow and leachate. The groundwater depression at the base of the leachate trench is maintained to ensure that the trench acts as a hydraulic barrier, with leachate/groundwater effectively contained to prevent off-site migration of contaminants.

Further details regarding the leachate collection system and groundwater at Green Island landfill is available in GHD 2024A.

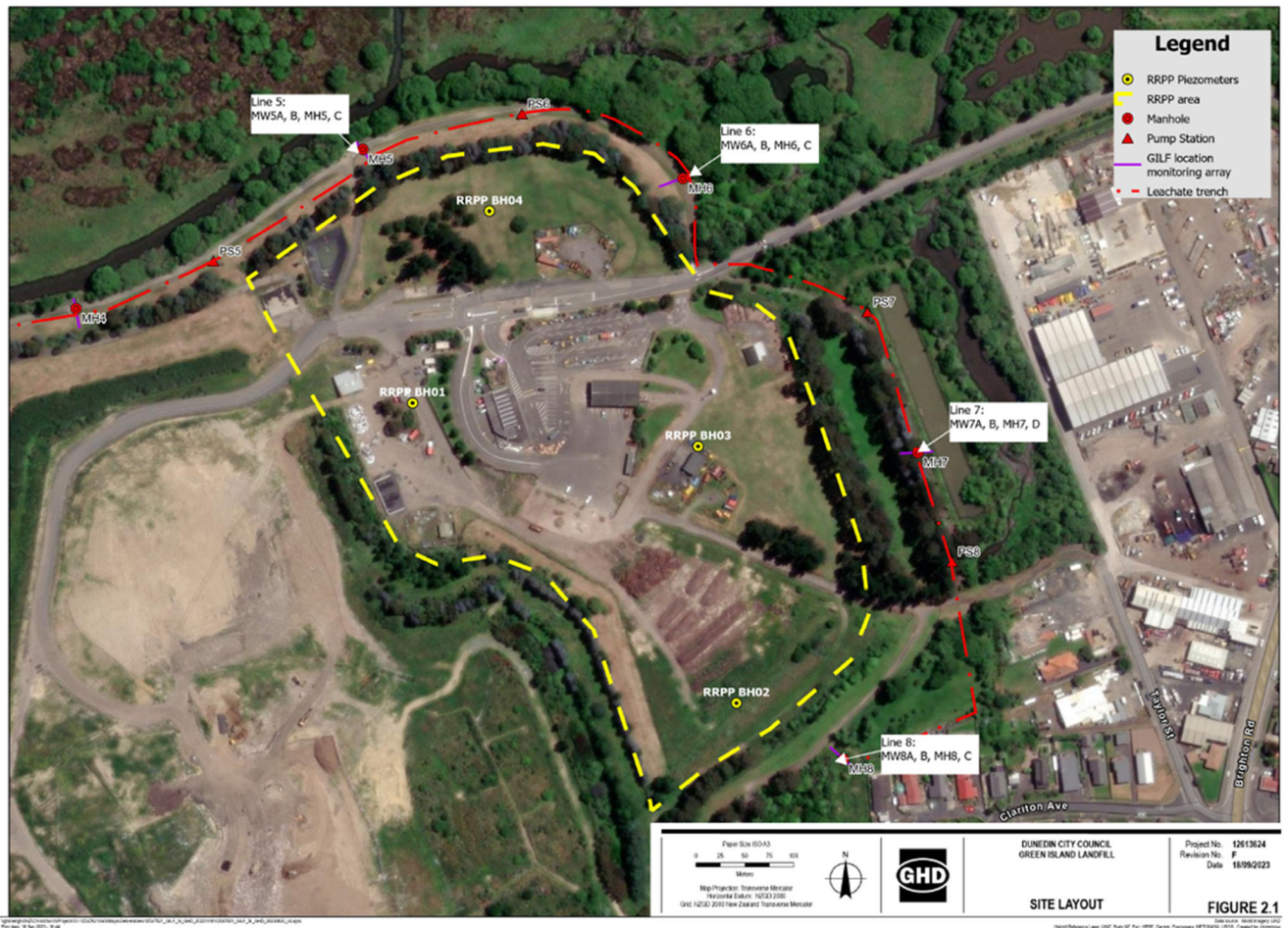


Figure 4 Leachate Interception Trench Location

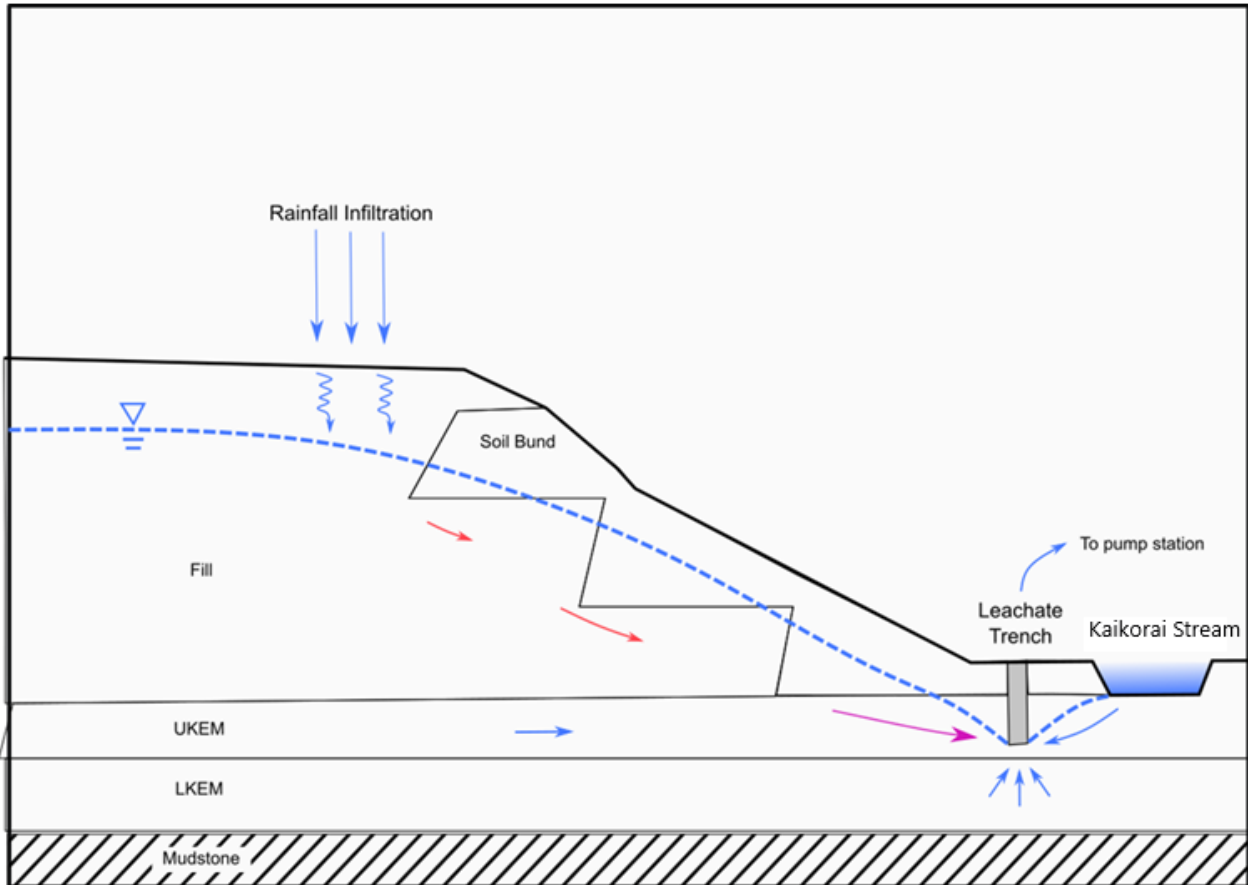


Figure 5 Schematic Diagram of Leachate Collection System

The collected leachate/groundwater is pumped via a series of pump stations to the GIWWTP, located 200m to the south of the landfill.

In the past five years the total pumping rates from the trench are typically between 1 and 2 litres per second (L/s), peaking at up to 8-9 L/s after periods of rainfall. For nearly 20 years the GIWWTP has managed this range of leachate flow. The treatment plant treats the water along with Dunedin's wastewater. In total GIWWTP manages approximately 30 million litres per day (equivalent to approximately 350 L/s) of wastewater from the wider Dunedin area. Treated water from the GIWWTP is discharged to the ocean at Waldronville, with the ORC consents for the WWTP being the responsibility of the DCC 3 Waters Group.

### 3 DESCRIPTION OF FACILITIES AND ACTIVITIES

The proposed layout of the RRPP is shown on Figure 2 and the new buildings and structures are numbered and cross referenced in Table 1. Table 2 lists the existing facilities that are to be retained (A, B and C), whilst the existing activities that will be relocated to accommodate new facilities are also included (D, E, F and G).

Figure 2 shows the access roads that will be upgraded or developed. The roads designed for the RRPP will feature new asphalt surfaces. The design of the roads will prioritise factors such as safety, durability, load-bearing capacity, and efficient traffic flow within the plant premises as shown on Figure 2.

Tracking curves of vehicle movements shown on Figure 3 Layout Plan are all Commercial Vehicles (non-public), except for the single path of Domestic vehicles (i.e. public) going from Area E, around to the domestic BWTS drop-off (3) or Greenwaste Dropoff (9) then departing the site around past the exit weighbridge. Separation of domestic traffic and commercial traffic is important to the safe operation of the site and is achieved through the proposed layout.

*Table 1 New RRPP Facilities*

Plan Reference Number	Proposed Facility	Facility Activity
1	MRF Building and site	Plant transforming comingled recyclable waste into sorted bales
2	MRF Apron	Storage of MRF bales ready for loading and off take
3	BWTS	Drop off of general waste by public and commercial customers – and loading of off take trucks. Timing of construction of the BWTS is dependent on closure of Green Island landfill and the need to transport waste to another facility.
4	Front office and staff facility	Staff amenities: change rooms, lunchrooms, toilets and showers.
5	Organic Reivals Building (ORB)	Drop off and shredding of organic waste (food waste and green waste), (subject of a separate resource consent application).
6	Truck Wash Bays	2 wash bays with steam cleaner.
7	Construction and Demolition (C&D) Sorting Pad	Drop off and sorting of construction and demolition waste. Note access for commercial vehicles to offload within BWTS (3 above) is across this pad.
8A	Hazardous Drop Off (Public)	Drop off of hazardous waste by public
8B	Hazardous Waste Storage	Sorting and storage of hazardous waste
10	Glass Bunkers	Storage of glass waste
11	Organic Processing Facility (OPF) Bunkers	Aerated static pile bunkers for composting of organic waste
12	Organic Processing Facility (OPF) Maturation	Windrowing of composted material after the bunkers for curing/maturation
13	Mechanical Plant	Ventilation of the OPF bunkers
15	Transport Compound Area	Parking of truck fleet
16	Office Parking	Staff and visitor parking
17	ESL commercial office	Office
18	Possible Bunkers Extension	Future composting bunkers if the #11 are at capacity



Table 2 Existing Facilities to be retained.

Plan Reference Number	Existing Facility	Facility Activity
A	Rummage Store	Public access for drop off or purchase of pre-loved goods.
B	Wheel Wash	For trucks leaving Green Island landfill and any other trucks requiring wheel cleaning.
C	Education Centre	An existing small classroom facility for undertaking education activities such as school visits and other community groups
D & 9	Domestic Waste Transfer Station. Re-purposed as green waste Drop-off.	<p>The existing domestic waste transfer station will continue to operate until the construction of the BWTS. Domestic waste drop offs will then be incorporated into the new BWTS.</p> <p>The current building will be re-purposed to allow domestic drop-off of green waste. Commercial green waste will be dropped off at the ORB directly.</p>
E	Recycling Drop-off	The existing recycling drop-off will continue to operate, being areas where public can drop off recyclables such as plastics, cardboard, steel, and whiteware.
F	Diverted Material Storage	Storage of tyres, plaster board, white ware, gas bottles, electronic waste etc. that are then collected by commercial vehicles to be taken away for recycling.
G	Landfill plant maintenance and associated storage.	Maintenance shed / shelter for plant maintenance as well as storage of items that are essential to the landfill management, environmental monitoring equipment, pumps, gas well materials.

Note: - Items F and G are currently undertaken in the proposed locations of the ORB Building (5 above) and the Transport Compound Area (15 above).

### 3.1 Timeline for Development

From mid-2024 kerbside food scraps and garden waste collection will commence in Dunedin. This requires the construction of the ORB at Green Island (see Figure 2 and Table 1) to receive and shred the collected organic materials. The ORB is the subject of separate resource consent applications to ORC and DCC due to the timeline. Once constructed, organic material processed at the ORB will be trucked off site for further processing in Timaru until the proposed OPF is operational.

The balance of the RRPP facilities (with the exception of the BWTS) will be constructed by mid-2025, including the OPF bunkers and maturation area, to allow processing of organics on site.

The timing of the BWTS building construction will depend on the closure of the Green Island landfill and the need to transport waste to Smooth Hill or another facility.

### 3.2 Materials Recovery Facility Building and Apron

#### 3.2.1 Building design

The purpose of the Materials Recovery Facility (MRF) building is to facilitate the effective sorting, processing, and recovery of recyclable materials from the kerbside and commercial recycling collections. Drawings and 3-D renditions of the building are included in Appendix C. The MRF building serves several important functions, including:

- **Material Sorting:** The MRF will provide a dedicated space for sorting different types of recyclable materials. The building layout and equipment are designed to optimise the sorting process, allowing workers or automated systems to separate and categorise recyclables efficiently.

- Material Processing: Once the materials are sorted, the MRF building will provide an area for further processing. This involves baling the recyclables to prepare them for transportation to recycling facilities or end markets. The building accommodates the necessary equipment and machinery for these processing activities.
- Storage and Temporary Holding: The MRF Apron will be the storage area for holding the sorted and processed materials. This allows for efficient organisation and management of recyclables before they are transported to their next destination. Proper storage helps prevent cross-contamination of the recycling streams and facilitates the sorting of baled material before loading the bales on trucks or into containers for transportation.
- Administrative Operations: The MRF building will include administrative offices to support the day-to-day operations of the facility. Administrative staff, supervisors, and management personnel utilise these offices for tasks such as record-keeping, scheduling, communication, and coordination with external stakeholders.
- Observation deck. The purpose of the observation deck is to provide a vantage point for visitors or staff members to observe and learn about the materials recovery processes and operations taking place within the facility. It serves as an educational and informative space where people can gain insights into the recycling and waste recovery procedures.
- Employee Facilities: The MRF building will provide facilities for employees. These amenities contribute to the comfort and well-being of the workforce, promoting productivity and job satisfaction.

Overall, the purpose of the MRF building is to create a functional and efficient facility that optimises the sorting and recovery of recyclable materials while ensuring the safety of workers and minimising environmental impacts. Existing MRF facilities are currently located on a separate property on Brighton Road. This recycling centre will close once the MRF is operational.

The MRF will have a level floor to facilitate the efficient and safe manoeuvring, unloading, and storage of materials. The processing equipment may have a number of conveyors to feed in materials. The MRF footprint will be approximately 70m x 40m for the technical building and about 60m x 30m for the apron. The MRF portal knee height is 10 m above existing ground level with the roof ridge at maximum 16m above existing ground level. The height required within this building is determined by the dimensions and size of the mechanical plant and equipment that undertake the sorting and processing of the incoming recyclables. The MRF will be supported by shallow concrete foundations and using geotechnical ground improvement solutions (a compacted gravel raft) to a maximum depth of 2.5m below ground level. A landfill gas membrane will be included within the engineered fill to avoid penetration of landfill gas within the new building.

Construction of the MRF will result in an estimated 11,450m<sup>3</sup> of soil disturbance. Excavated material is to be disposed of at the operational portion of the landfill as described in GHD(2024E): Contaminated Land Management Plan (CLMP). It is also possible that dewatering will be required as described in both the GHD (2024A) and the Contaminated Land Management Plan (GHD 2024E).

The building will be roofed and clad in prefinished profiled metal cladding fixed to galvanised girts and purlins. There will be large commercial motorised roller doors to allow the movement of vehicles and waste material in and out of the building as well as hinged personnel doors for day-to-day use and fire egress doors. Intake and off take will go through the North-West facade only and the canopy will be for storage and the loading zone to the North and West as well. The facade will feature a neutral green shade colour.

The MRF plant inside the building will be designed, supplied, and installed by the operator. It is anticipated that the MRF will require a 500kVa transformer for power supply.

A one-way ring road around the MRF will be built for access for both intake and offtake traffic.

Traffic associated with the MRF will comprise:

- Kerbside recycling trucks delivering to the MRF – 4 Trucks (3 x 3 Axle Sideloads, 1 x 2 Axle rearload) 8 offloads per day.

After sorting and baling, recycling will then be loaded into shipping containers for export via Port Chalmers.

Bins are also to be provided for public drop off at Transfer Stations recycling drop-off area, these will be transferred to the MRF using Gantry or front-end loader (FEL) trucks.

The MRF will process approximately 5 tonnes per hour (TPH) or 9,300 (tonnes per annum (TPA)).

Any liquids that accumulate in the building due to wash down or from recycled materials will be treated as leachate and discharged to the existing leachate collection system, as described in GHD 2024D.

### **3.2.2 Integration of the new building into the existing the site layout**

Functionally, the MRF building will be seamlessly connected to the existing infrastructure of the waste transfer station. The positioning of entrances, exits, and access points will be strategically determined to minimise disruptions to the station's operations and to achieve integration with existing waste processing and handling systems, such as conveyor belts, sorting equipment, and waste storage areas.

The south façade of the MRF (which faces the nearest commercial and residential neighbours) will be completely passive with no vehicle access.

The MRF location (#1 on the layout plan: Appendix A and Figure 2) will allow for the recyclables collection trucks to use the existing weighbridge and to turn left at the newly created roundabout after the weighbridge on arrival exiting the same way via the existing exit weighbridge.

The MRF and associated access roads have been positioned to ensure they will not impact existing landscape plantings. The existing plantings are important from a landscape and screening perspective (see Boffa Miskell Landscape and Visual Assessment Report (Boffa Miskell, 2023).

## **3.3 Bulk Waste Transfer Station Building and Construction and Demolition Sorting Pad**

### **3.3.1 Building design**

Waste transfer stations play an important role in a community's total waste management system, serving as the link between a community's solid waste collection and a final waste disposal facility. Drawings and 3-D renditions of the proposed BWTS building are included in Appendix C.

The proposed BWTS will be an industrial building designed to efficiently handle the receiving and loading of general waste. The primary objective of this facility is to streamline the process of waste management and prepare the waste for further transportation to appropriate disposal sites such as Smooth Hill, or any remote or distant Landfill.

The building layout and features will be tailored to optimise the handling of general waste, which typically includes non-hazardous materials from residential, commercial, and industrial sources.

The building footprint will be approximately 30m x 55m with a portal knee height of 12m and the roof ridge at a maximum of 16m. The height required within this building is determined by the dimensions and size of the mechanical plant undertaking the sorting and loading of the incoming waste stream. The building will be constructed of steel portal positioned and fixed to an engineered concrete slab and foundation system. The building will include an engineered geotechnical sub floor design including membranes designed to prevent landfill gases from entering the building.

Construction of the BWTS will result in an estimated 3810m<sup>3</sup> of soil disturbance. Excavated material is to be disposed of at the operational portion of the landfill as described in GHD (2024E): Contaminated Land Management Plan.

The concrete slab will include falls to drainage channels intended to collect and control all internal liquids and any vehicle washed down. These liquids will be managed as leachate and disposed of via the existing leachate collection system (GHD 2024D). Precast concrete walls will be used as push walls inside the building. The building will be roofed and clad in prefinished profiled metal cladding fixed to galvanised girts and purlins.

There will be large commercial motorised roller doors to allow the movement of vehicles and waste material in and out of the building as well as hinged personal doors for day-to-day use, and fire egress doors. The opening and closing of the doors will depend on specific operational requirements. However, it is likely that the doors will be open the majority of the time during operational hours and closed the majority of the time outside operational hours.

The North façade will be for domestic drop off (car and trailers) and the East façade will allow access for commercial drop off (trucks) within the building. There will be a drive through lane along the south side for loading and offtake (semi-trailers) inside the building. The facade will feature a neutral green shade colour.

Inside the building a handling machine will load the waste from the piles inside onto off take trucks. The offtake lane will join back with the MRF ring road to exit the site.

The building will have an internal lining to prevent birds from perching or nesting on the internal building structure.

Dust suppression will be managed in the building using a misting system secured to the underside of the roof. It is noted that dust can also be a source of odour and the misting will help manage this issue within and immediately adjacent to the building.

The C&D sorting pad (#7 on the plan in Appendix A and Figure 2) will be a concrete slab adjoining the BWTS. Construction skip bins will be dropped off and sorted on the pad. Remaining waste that cannot be recycled or reused will be pushed into the BWTS.

The footprint of the C&D pad will be approximately 1200 m<sup>2</sup>. The north side of the C&D pad will be fenced as it should not be accessed by the public. All runoff from the C&D pad will be treated as leachate and directed to the leachate treatment system (see GHD 2024D).

Construction of the C&D pad will result in an estimated 1200 m<sup>3</sup> of soil disturbance. Excavated material is to be disposed of at the operational portion of the landfill as described in GHD 2024E: Contaminated Land Management Plan.

The BWTS is designed to process 50,000 tonnes of waste per annum.

### **3.3.2 Integration into the existing the site layout**

The BWTS will be integrated into the existing traffic flows. All vehicles entering the site (domestic and commercial) will go through the existing weighbridge. The domestic vehicles will turn left directly after the weighbridge, before the newly created round-about, enter the paid zone and follow the one-way lane to the domestic drop-off within the BWTS. Commercial trucks will go through the weighbridge and use the new round-about to veer left making their way either over the C&D pad or inside the BWTS to offload.

The C&D pad and BWTS are shown as #7 and #3 on the layout plan (Appendix A and Figure 2).

## **3.4 Workers Facilities and EnvironZ Services Limited Office Building**

### **3.4.1 Building design**

Two stand-alone buildings will be situated at the centre of the site to support its operational and administrative functions.

**Front Office and Staff Facility (#4):** This building will serve as office space for staff directly involved in managing the Green Island RRPP. It will include welfare facilities for Green Island RRPP operational staff, a reception/front desk, a kitchen/lunchroom (for up to 30 people), toilets/showers/dry rooms, lockers/change rooms, and a meeting room. The construction will feature timber foundations and subflooring, prefab timber-framed walls and roof framing, lightweight cladding over a cavity with a rigid air barrier, and a treated timber frame. Pre-finished profiled metal roofing will be installed over steel/timber purlins and roof underlay. Insulation will be added to roofs, walls, and floors, and double-glazed thermally broken powder-coated aluminium external doors and windows will be used. The flooring will consist of commercial carpet and vinyl flooring over plywood subflooring. The facade will feature a neutral green shade colour.

**ESL Commercial Office (#17):** This single-story office will include a small kitchen/lunchroom, a unisex toilet/shower/dry room, lockers/change rooms (for up to 10 people), an open-plan office for administration, and a waiting/resting area for drivers. Both buildings will incorporate an engineered geotechnical subfloor design, including membranes designed to prevent landfill gases from entering the buildings.

The construction of these two buildings will result in an estimated 500 m<sup>3</sup> of soil disturbance. Excavated material will be disposed of in accordance with the guidelines outlined in GHD 2024E: Contaminated Land Management Plan.

Staff car parking spaces will be created along the existing road to the west of the current rummage store (#A on the layout plan). The rummage store will remain unchanged as part of this project. Additional car parking spaces for staff and visitors (#16 on the layout plan) will also be provided. For more details, please refer to Appendix C: Building Concept Architectural Plans.

### **3.4.2 Integration into the existing site layout**

The new building will not interfere with existing traffic flows and will be central to the site, equidistant from all operation areas.

## **3.5 Additional Truck Parking and Truck Wash Bays**

### **3.5.1 Area design**

Two truck wash bays (#6 on the layout plan) will be built consisting of concrete pads with falls draining to the leachate management system. Power and water supply will be required to service these wash bays.

The design of the truck wash bays emphasises space optimisation for seamless integration with the overall plant layout. Sufficient space has been allocated for manoeuvring and parking trucks during the cleaning process, accommodating vehicles of different sizes. This design consideration will enable smooth traffic flow. Based on the current design parameters, the volume of material disturbance for the wash bay is estimated at 130 m<sup>3</sup>.

The stage 1 transport compound will be extended to the south (#15 on the layout plan) to create an additional 21 truck parking spots. The total number of truck parking spots is 45.

All liquids from the truck wash bays will be managed as leachate and discharged to the existing leachate collection system as described in GHD 2024D.

### **3.5.2 Integration into the existing site layout**

Truck wash bays will be strategically located within the precinct, in close proximity to the waste unloading areas and road to prevent the potential spread of contaminants.

## **3.6 Household Hazardous Waste Drop Off and Storage**

### **3.6.1 Building design**

The household hazardous waste drop-off and storage building will be separated into two areas. The public facing zone (#8A on the layout plan) will provide for hazardous waste drop-off and separation, and a staff only zone (#8B) for further sorting and storing of hazardous waste. The footprint of the two areas will be approximately 48 m<sup>2</sup>. Based on the current design parameters, the volume of material disturbance for the hazardous drop off and storage area is estimated up to 119 m<sup>3</sup>.

The building will be steel framed with prefinished profiled metal cladding and roofing, reinforced concrete slab and foundations.

A designated drop-off area will be provided within the building to facilitate the safe and organised unloading of hazardous materials from vehicles.

The household hazardous waste drop-off and storage building will incorporate various storage systems to handle different types of hazardous materials and will include appropriate passive ventilation.

The building will be designed to Importance Level 3 (IL3) standards and the building will include an engineered geotechnical sub floor design including membranes designed to prevent landfill gases from entering the building.

This facility will be similar to the existing household hazardous waste collection facility present on site and will have the same function.

### **3.6.2 Integration into the existing site layout**

The hazardous drop-off and storage buildings will be integrated into the existing traffic flows. Both buildings will be located on the route to BWTS domestic drop-off, with loadout of the storage building from the commercial traffic route to the C&D sorting pad.

## **3.7 Green Waste Drop Off**

### **3.7.1 Building design**

The garden waste drop-off area will be a designated space where domestic customers can bring their garden waste for proper disposal or composting. It will be designed to facilitate the separation and management of garden waste.

The new garden waste drop-off area will be made by reusing and upgrading the existing transfer pit (#9 and #D on the layout plan). Cars and trailers will reverse onto the south side of the building and drop garden waste. The garden waste will be periodically collected and transferred to the ORB for processing.

The drop-off area will incorporate safety measures to protect both users and staff. This will include safety barriers and fencing to prevent unauthorised access and ensure a safe operating environment. Adequate lighting will be installed to enhance visibility during all operational hours.

### **3.7.2 Integration into the existing site layout**

The garden waste drop-off area will be integrated within existing traffic flows. Public vehicles will go through the existing weighbridge turn left directly after the weighbridge, before the newly created round-about, and go through the paid zone to the garden waste drop off area.

## **3.8 Glass Bunkers**

### **3.8.1 Area design**

Glass bunkers in a resource recovery park serve as storage facilities for collected glass waste. They are designed to safely contain and store glass materials until they can be transported to other facilities for recycling or other appropriate treatments. Glass bunkers are constructed using reinforced concrete to ensure structural integrity.

Three glass bunkers (#10 on the layout plan) will be located near the existing northern leachate pond. Bunker walls will be 3m high and the total footprint of the bunkers will be 400m<sup>2</sup>. Based on the current design parameters, the volume of material disturbance for the glass bunker is estimated at 400 m<sup>3</sup>. They are to be sited on a concrete slab and a one-way ring road will be created around them. A retaining wall needs to be created at the back of the bunkers in the existing bund..

Within the bunkers, glass waste will be organised based on colour or type to facilitate efficient recycling processes.

Liquids that accumulate in this area from rainfall/delivered materials will be treated as leachate and discharged to the existing leachate collection system as described in GHD 2024D.

### **3.8.2 Integration into the existing site layout**

The kerbside glass collection trucks will go through the existing weigh bridge and then turn right at the new round-about to access the glass bunkers compound.

## 3.9 Organic Bunkers, Maturation Area and Mechanical Plant

### 3.9.1 Area design

The organics bunkers have been designed to receive shredded organic waste (food and green) originating from the ORB. A mechanical aeration system (#13 on the layout plan) will accelerate the composting process.

Bunkers will be constructed with concrete retaining walls for placement of the organic materials and to prevent these materials from spreading or contaminating the surrounding environment.

Six bunkers (#11 on the layout plan) of approximately 140m<sup>2</sup> each will be built on a concrete slab and the organic waste will be contained within three walls (all 3m height), the south wall will include penetrations for the mechanical aeration system. The bunkers have been designed to allow for bidirectional air flow through the material, allowing for good control over temperature and aeration with consistent air distribution.

The bunkers will open to the north and a concrete apron (14m in width) level with the floor of the bunkers will provide a manoeuvring zone for the loader that fills and removes organic materials from the bunkers.

Liquids from the bunkers and apron will be collected and discharged to the leachate collection system for treatment and disposal via the GIWWTP – see GHD 2024D for further details...

The design of the bunkers is based on successful bird management strategies employed at ESL Hampton Downs facility. This is further detailed in section 6.3.6

A provisional area for four additional future bunkers has been identified in the plans (#18 on the layout plan).

Once the organic material has been composted, it will be moved from the bunkers to a hard fill maturation area (#12 on the layout plan) and formed into windrows/piles ready for offtake.

Minimum retention times:

- 21 days in bunkers
- 30 days in maturation.

The maturation pad will have a gentle slope to promote leachate flow away from the pad to the leachate collection system – see GHD 2024D for leachate management details. "

Construction of the OPF area will result in an estimated 3,040m<sup>3</sup> of soil disturbance. Excavated material is to be disposed of at the operational portion of the landfill as described in GHD 2024E: Contaminated Land Management Plan.

The OPF design capacity is 20,000 tones (a mixture of food waste, mixed food, and green waste).

### 3.9.2 Integration into the existing the site layout

Loaders will transfer the organic shredded organics from the ORB to the bunkers, and from the bunkers to the maturation area.

As this area will be newly created, a new ring road will be built to allow semi-trailers to access the newly created roundabout, load compost and exit the site through the weighbridge.

## 3.10 Building Colours and 3-D Images

Appendix B and C present a digital 3-D rendition of the site and the various structures. The agreed colour theme for the buildings is a neutral green shade colour. Note the images show Karaka Green which appears as a dark colour on some of the 3-D renditions due to the modelled angle of sunlight. This is an example of a possible colour. The final shade of green is yet to be determined.

## **3.11 Resource Recovery Park Precinct Construction Methodology**

The following general approach will be adopted for the construction of the RRPP buildings and related infrastructure by a contractor. The following construction methodology serves as a set of guidelines only.

### **3.11.1 Site Supervision**

The construction of the RRPP facilities will be supervised by a suitably qualified engineer (CPE).

### **3.11.2 Construction Standards and Quality Assurance**

Civil engineering and building design and construction activities will be undertaken in accordance with applicable New Zealand Standards relating to landfill construction (including geotechnical, lining system and drainage standards).

### **3.11.3 Site Preparation**

#### **3.11.3.1 Vegetation and Demolition**

The site will be cleared of existing vegetation, trees, and bushes. This may involve tree removal, brush clearing, and the removal of any invasive plant species. Any clearing will be limited to vegetation that is currently occupying the construction sites. Vegetation will not be cleared or damaged that is an integral part of the visual screening of the site as described in the Boffa Miskell Landscape and Visual Assessment Report (Boffa Miskell, 2023).

If there are existing structures, this will involve the demolition of these structures and removal of any debris or materials that could hinder construction.

#### **3.11.3.2 Grading and Earthworks**

The site will be prepared by grading the land, which involves levelling or reshaping the terrain to create a suitable foundation for the RRPP structures. Areas will be excavated as required for foundations, utilities, and other site features, ensuring proper drainage and slope management. All excavated materials will be managed in accordance with the Contaminated Land Management Plan (GHD 2024E)

#### **3.11.3.3 Access Roads and Utilities**

Access roads to the site will be established, allowing construction vehicles, materials, and equipment to enter and exit efficiently. Temporary utilities such as power supply, water lines, and temporary sanitary facilities will be installed to support construction activities.

#### **3.11.3.4 Temporary Facilities**

Temporary facilities such as site offices, construction trailers, storage areas, and parking spaces for workers and construction equipment will be set up. Temporary fencing or barricades will be established to demarcate the construction site and ensure site security and safety.

### **3.11.4 Foundation and Infrastructure Construction**

#### **3.11.4.1 Excavation**

The designated areas where the foundations will be constructed will be excavated. Significant excavation will be required (2m to 2.5m deep under the buildings) with removal of the excavated material and management as per the Contaminated Land Management Plan (GHD 2024E). The total volume for excavation is estimated to be approximately 21,133 m<sup>3</sup>.

Once excavated, the area will be prepared for the subsequent foundation construction (compacted gravel raft to fill that excavation – large compactors).



### 3.11.4.2 Foundation Construction

Concrete will be poured, or other foundation materials placed in the excavated areas, ensuring proper compaction and reinforcement followed by installation of foundation footings, grade beams, and other structural elements required to provide stability and distribute loads effectively.

### 3.11.4.3 Structural Components

As the foundation work progresses, construction of the structural components will commence followed by erection of the building and structures, including installation of structural elements such as steel frames, columns, walls, roofs, pre-cast concrete panels, and flooring systems.

### 3.11.4.4 Utilities and Services

The necessary utilities and services will be installed within the site. This includes electrical systems, including power supply, lighting, control panels, and wiring for the entire facility. The mainboards of each area will be able to be supplied by a temporary generator in the event of a power failure.

Mechanical systems such as ventilation, HVAC (heating, ventilation, and air conditioning), plumbing, and fire suppression systems will be installed along with establishing water supply and wastewater management infrastructure.

### 3.11.4.5 Site Infrastructure

The supporting infrastructure within the site will be developed including:

- Construct access roads, parking areas, and internal circulation paths for vehicles and pedestrians.
- Build necessary structures such as security checkpoints, weighbridges, and control stations to facilitate efficient operations and ensure site security.

## 3.12 Resource Recovery Park Precinct Construction Timetable

The construction project is scheduled in various phases (SP1, SP2, SP3), including design, procurement, construction, installation, and the necessary commissioning procedures.

- SP1 – Separable Portion 1. Construction of the ORB and associated roading/civils (subject of a separate consent application process).
- SP2 – Separable Portion 2. Construction of the OPF, C&D pad, MRF and associated facilities.
- SP3 – Separable Portion 3. Construction of the BWTS (Bulk Waste Transfer Station) building and associated facilities.

The construction program is to be confirmed by the contractor selected by the DCC. The information presented herein is intended strictly as a point of reference for general site activities.

Operating hours during construction will be 7am – 7pm.

A summary of the anticipated plant that will be required on site for construction is as follows.

*Table 3 RRPP development construction timetable.*

#	Deliverable/Milestone	Date	Note
1	SP 1 – Construction of ORB and transport compound	October 2023 to July 2024	Typical heavy machinery might be utilised during construction including but not limited to knuckle booms, telescopic loaders, scissor lifts and compactors Excavators, Bulldozers, Cranes, Backhoes, Loaders, Dump Trucks, Concrete Mixers, Pavers, Rollers etc.
2	SP 2 – Construction of OPF, DCF, MRF, GF, roading and associated works	May 2024 to February 2026	Typical heavy machinery might be utilised during construction including but not limited to: Excavators, Bulldozers, Cranes, Backhoes, Loaders, Dump Trucks, Concrete Mixers, Pavers, Rollers etc.

#	Deliverable/Milestone	Date	Note
3	SP 3 – Construction of BWTS, roading and associated works	TBC	Typical heavy machinery might be utilised during construction including but not limited to: Excavators, Bulldozers, Cranes, Backhoes, Loaders, Dump Trucks, Concrete Mixers, Pavers, Rollers etc.

### 3.13 Health and Safety

#### 3.13.1 Objectives

The landfill is constructed and operated in way that prevents harm to self, other workers and the public and meets obligations under Health and Safety at Work Act 2015 (HSWA).

#### 3.13.2 Procedures

The following health and safety procedures will be implemented during the construction and operation of the landfill:

- A site-specific Health and Safety Plan will be prepared and implemented to meet obligations under the HSWA.
- All site and operational hazards and risks are to be identified, assessed and eliminated where possible.
- Responsibilities are to be assigned for the management of health and safety and training of staff together with regular compliance monitoring.
- All site staff are to be aware of all the risks and will be trained to manage those risks or be prohibited from entering the risk zone.
- Staff that may be in contact with hazardous chemicals, dust or biological contaminants are to be provided with appropriate PPE and inoculations.
- All staff, contractors, and visitors are to be formally inducted and advised of the hazards on site and where they may or may not have access. All contractors and visitors are to be accompanied unless trained to manage the identified risks.
- Fire safety measures and water supply mechanisms detailed in section 4 will be in place at all times.

[Content will be finalised following the issuing of consents and as part of detailed design, and in collaboration with future landfill operator].

## 4 PROPOSED MANAGEMENT OF WATER SUPPLY, STORMWATER, LEACHATE AND WASTEWATER

Stormwater and leachate management is described in detail in GHD 2024D . The overarching approach is as follows:

### **Clean Water:**

Stormwater runoff from the building roofs will be discharged into rainwater tanks that can be used to wash down areas as required. The overflow from these tanks will be directed to the stormwater management system which then discharges to the Kaikorai Stream via the existing sediment ponds and constructed wetland.

### **Contaminated Water:**

Where there is a higher risk of contamination, activities will be either undertaken under roofed areas (to avoid interaction with stormwater) or contaminated runoff will be collected and discharged to the existing leachate collection system.

### **Stormwater:**

Stormwater in areas not exposed to waste-type contamination but associated with roads and vehicle movements and other similar activities will be directed to the stormwater treatment systems for each catchment.

### **Leachate:**

Buildings and areas producing leachate (BWTS, ORB, organics bunkers and maturation area, trucks wash bays, glass storage area) will be drained separately and connected to the existing landfill leachate system and treated in the existing treatment plant.

### **Wastewater:**

The staff amenities (toilets and showers) will be connected to the perimeter leachate pumpstation system, which discharges into existing sewer main system, and ultimately the GIWWTP.

### **Firefighting Water**

General site requirements are to be met to provide the necessary equipment for Fire and Emergency New Zealand (FENZ) to operate in an emergency.

These are as follows:

- Fire alarm panel to be located at the attendance point to site for FENZ with an unobstructed path within 20 m to the panel from a fire truck. Fire alarm panel will need to be approved by FENZ.
- Inground hydrant systems are to be installed throughout the site to allow water for firefighting.
- Allow for fire and emergency appliances to drive internally through site (25 tonnes, 4 m clear width)

A fire hydrant-based system is therefore designed to provide for the following fire flow categories, based on the NZFS CoP:

- ORB building FW5 based on approximately 500 m<sup>2</sup> and Fire Hazard Category FHC = 3.
- Office building(s) – each of these are FW3.
- MRF building is FW7 based on approximately 4,665 m<sup>2</sup> and Fire Hazard Category FHC = 3
- BWTS building is FW7 based on approximately 1,700 m<sup>2</sup> and Fire Hazard Category FHC = 3

The two FW7 buildings will be provided with a firefighting water supply of 200 L/s for 180 minutes (the equivalent of an FW6 firefighting flow requirement).

The DCC water supply network will likely only provide a maximum flow of 100 L/s, and to achieve this, an additional connection main is required.

Due to the insufficient firefighting supply from the DCC network, a second supply network, connected to an on-site storage tank, will be provided. This system will provide 180 minutes of firefighting at 100 L/s, supplied from two steel 540 kL storage tanks, or an equivalent volume single tank or flexible bladder. The system will

be pressurised by a booster pump station adjacent to the tanks, providing the necessary flow and pressure at each of the fire hydrants connected to this system.

The omission or installation of fire sprinklers into the MRF and BWTS building will determine the requirements for the water supply on site, without sprinklers an FW7 firefighting flow is required (more than 200 L/s water demand). If sprinklers are installed anFW2 firefighting flow is required (25 L/s water demand).

## 5 MANAGEMENT OF CONTAMINATED LAND

The Green Island RRPP will be located in an area of historic waste placement at the Green Island landfill. Waste was placed through this area from the 1950s through to the 1970s. The depth of waste is estimated at 6 to 8m.

An environmental site investigation was undertaken over the proposed RRPP portion of the Green Island landfill (GHD, 2021) with the locations of the investigation points (test pits, boreholes and landfill gas monitoring wells) spread across the RRPP to provide coverage of the whole area including where new buildings and areas are proposed to be constructed. GHD considers this report to be the equivalent of a Detailed Site Investigation report under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

Thirty-four test pits were excavated across the RRPP to depths of up to 3.2m below ground level (BGL). In addition, four boreholes and four landfill gas monitoring wells were drilled and installed. Landfill waste material, comprising bricks, timber, concrete, metal, clothing, paper, asphalt etc., was encountered at all the investigation points. The waste is overlain by topsoil type material approximately 0.2-0.3m thick.

The water levels recorded in the boreholes across the RRPP were between 2.5 and 3.8m BGL on 2nd November 2021 but were noted to fluctuate with rainfall. It is noted that the Green Island RRPP will be located within the existing leachate control system described earlier in this report, consisting of a perimeter collection trench with regular pumping stations. Leachate/groundwater from both the active landfill and the transfer station area will be intercepted and collected by the trench and pumped to the nearby wastewater plant for treatment.

Methane gas was found to be present in all of the landfill gas monitoring wells. The new building and structures have been designed to manage the risk of landfill gas (LFG) infiltration. Given the age and relatively shallow depth of waste in this area, no other LFG management measures are proposed.

Heavy metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbon (TPH), semi-volatile organic compounds (SVOCs) and asbestos were reported present at concentrations above the adopted background values at all sample location points. However, none of the reported concentrations were above the human health NES-CS1 Commercial / Industrial soil contaminant standard (SCS) criteria values or adopted guidelines values.

Comparison of reported laboratory analytical results to the ANZECC2 (2000) ISQG High and Low trigger values and the ANZG3 (2018) GV High and DVG values indicated that heavy metals, PAHs and SVOCs were present at concentrations above these guideline values.

Considering these findings, construction and post construction contaminated land management plans will be prepared to manage the risk to workers and the environment both during and after construction. In summary, all excavated materials will be disposed of at the existing Green Island landfill. In the event dewatering is required during foundation excavation, all extracted water will be treated as leachate and disposed of via the existing leachate collection system.

Refer to GHD 2024E: Contaminated Land Management Plan

## 6 OPERATIONS MANAGEMENT

### 6.1 The Waste & Diverted Materials Journey

All vehicles entering the site (domestic and commercial) will go through the existing weighbridge. The existing landfill activity generates some 175,000 vehicle trips per year or approximately 475 vehicle trips per day. Approximately 30% of the trip volume is estimated to be heavy goods vehicles. The traffic impacts associated with the RRPP development are described in detail in the Integrated Transport Assessment (GHD, 2024B). Traffic routing is shown on Figure 3.

Breakdown of expected traffic by collections type:

- Kerbside Refuse – 6 trucks, (4 x 3 Axle Sideloads, 2 x 2 Axle Rearloads) 12 offloads per day (each truck will leave site in morning, return during the day to unload, leave site and return at end of day, tip off and park up). Note that many of these trucks are currently already going to the Green Island landfill to offload their waste and we expect an increase from 1 July 2024.
- Kerbside Glass – 5 trucks (all 2 axle) 5 offloads per day.
- Kerbside Recycling – 4 trucks (3 x 3 Axle Sideloads, 1 x 2 Axle rearload) 8 offloads per day.

Kerbside Organics – 7 trucks (5 x 3 Axle Sideloaders, 2 x 2 Axle REL) 9 offloads per day. Commercial trucks will go through the weighbridge and use the new round-about. During the operational period of Green Island landfill (estimated to be until approximately late 2029) all general waste trucks will continue straight ahead up to Green Island landfill for waste disposal. All other commercial trucks bringing diverted materials will turn left to the ORB, MRF, C&D pad. There will also be offtake traffic from the MRF, BWTS and the organics maturation area. ESL trucks going to park in the transport compound will be able to use the wash bays before parking. When the BWTS becomes operational and waste is directed to a remote landfill site, general waste vehicles will go to the BWTS, and off-take vehicles will take waste away from site.

#### 6.1.1 Diverted materials & Waste streams

- Refuse – will be delivered into the BWTS (kerbside collection trucks, commercial collections, domestic cars, utes and trailers) and loaded into truck and trailer units at the rear of the BWTS using a material handler.
- Glass – kerbside trucks will deliver direct to the glass bunkers. Public drop off will be into gantry bins in the recycling area that will be transferred to the bunkers via a gantry truck. Glass will then be loaded from the bunkers into the truck and trailer units for transport to further processing outside of the site area by a third party.
- Recycling – will be delivered to the MRF directly by the kerbside collection trucks. This waste will be sorted and baled and then loaded into shipping containers for export. There will be bins provided for public drop off at the transfer station, these will be transferred to the MRF using gantry or front-end loader (FEL) trucks.
- Construction and demolition waste – construction and demolition trucks and skip bins will be offloaded on the C&D pad and sorted by operators. Materials will be diverted as much as possible to different streams and the remainder will be waste and pushed into the BWTS.
- Organics – will be delivered to the ORB, shredded and then transferred by loader or 30m<sup>3</sup> huka bins to the OPF. Once composted and matured through the OPF, organics will be loaded out into truck and trailer units and taken off site.
- Green Waste – will be delivered via a dedicated drop off area for cars and trailers, then transferred to the ORB for shredding using huka bins.

#### 6.1.2 The recycling journey to/from the MRF:

- Collection: Mixed recyclables will be collected from the kerbside and recycling drop off points by designated collection trucks and transported to the RRPP site. In addition, commercial collections of recycling will be dropped off to the site,

- **Sorting and Separation:** At the MRF, the collected material will be unloaded and will undergo sorting and separation. Various mechanical and manual processes are employed to separate different types of recyclable materials. This includes conveyor belts, screens, magnets, optical sorters, and manual sorting stations. The goal is to separate different materials into distinct streams for further processing.
- **Material Processing:** Once sorted, the different recyclable materials will be processed further to prepare them for recycling. This involves compacting and baling the materials to make them more manageable and suitable for transport to recycling facilities.
- **Quality Control:** Quality control measures will be implemented to ensure the materials meet the required standards for recycling. This will involve manual inspections, automated systems, and sampling to identify and remove any contaminants or non-recyclable items. These items will be organised and stored in the MRF apron area until they are ready to be transported to specific recycling facilities. Proper storage helps maintain the quality and integrity of the materials.

### **6.1.3 The waste journey to/from the BWTS:**

- **Collection:** Once the Green Island landfill is closed and the BWTS is operational waste collection trucks will transport the waste from residential, commercial, and industrial areas to the BWTS. The transfer station will serve as a central point where waste from multiple collection routes is consolidated. This is a change to the current operation where waste is taken directly to the Green Island landfill tip face and the existing buildings only manage domestic drop off.
- **Unloading and Inspection:** At the transfer station, waste collection trucks will unload their contents into a designated area (inside the BWTS and accessed through the West doors). The waste will be inspected for any prohibited or hazardous items that may require special handling or removal. Domestic users, commercial waste operators and other businesses drop off will also be allowed through the paid zone of the public drop off area (North side of the BWTS)
- **Sorting:** Once the waste is unloaded, it may undergo sorting and separation processes. Hazardous materials or items that cannot be processed further may also be identified and set aside for appropriate treatment or disposal.
- **Transport:** The waste will be loaded onto semi-trailer trucks within the BWTS (drive through lane on the south side) and transported from the BWTS to its final destination (Smooth Hill landfill or other landfill site).
- **Timing:** In almost all circumstances waste will be resident in the BWTS for up to 24 hours. However, under a limited number of circumstances (holiday weekends or unexpected events) waste may be retained in the BWTS for up to 72 hours.

### **6.1.4 Organics journey to/from the OPF bunkers:**

The journey of shredded organics and green waste to and from the bunkers involves the following steps:

- **Collection:** Kerbside collection vehicles will bring materials to site and offload in the ORB. Organics from domestic drop-off will be transported to the ORB by the operators.
- **Mixing and shredding:** mixing of the food waste and the garden waste occurs in the ORB building, it is also shredded inside the ORB and the shredded material is gathered into an internal bunker.
- **Transportation:** the shredded material is transported by loaders or into 30m<sup>3</sup> Huka bins from the ORB to the OPF bunkers
- **Placement in bunkers:** The sorted shredded organics will be loaded into the aerated static pile bunkers using a front-end loader. It will take a few days to fill a bunker, depending on the rate of incoming feedstocks.
- Initially, the system will be operated manually in a positive aeration mode (air is blown up through the aeration holes and into the material) until the bunker is full. Running in positive mode during loading and unloading helps prevent the aeration holes from clogging and prevents the compost mix from becoming anaerobic.
- Once each bunker is full the materials will be composted for a period of at least 21 days. During that time the composting material may be moved from one bunker to another.
- Once the bunker is full, the system will begin automated operation, with reversing aeration mode, controlled by the automatic aeration control and temperature monitoring system.

- At the start of composting the aeration system runs in negative mode (air is drawn down through the material into the aeration holes and discharged through the biofilter) to maximise aeration and minimise odour generation. This allows the discharge gases to be treated on discharge through the engineered bio-filter.
- Most potential odour will be generated during the first nine days of composting.
- Each bunker is controlled separately by the automatic system controller, using a series of dampers to ensure each pile is composting optimally.
- As the composting process progresses, the temperature probes have two sensors that monitor the top and bottom temperature of the compost piles in the bunkers. When the system detects a variance of greater than seven degrees between the top and bottom of the pile, the aeration mode reverses or switches between positive and negative. This ensures that no part of the compost pile overheats, and that pasteurisation occurs throughout the entire pile.
- The automated system ensures a homogenous environment throughout the material pile and that all parts of the pile reach a minimum temperature of 55°C for at least three days to ensure pathogen destruction.
- Final Product: The compost is finally moved to the composting maturation area for the final stage. After the composting process is complete, the resulting products are taken off site by truck and trailer units. The final product is nutrient-rich compost, which can be used as a soil amendment in agriculture, horticulture, or landscaping.
- Further details on the operation of the organic's processing system are provided in GHD 2024E.

### **6.1.5 Days and hours of operation**

The publicly accessible areas of the RRPP, including the public drop-off areas, will be open between 8:00 am – 5:30 pm Monday – Saturday and 9:00 am – 5:30 pm Sunday.

The non-public accessible (operational) areas of the RRPP will be open 8.00 am – 5.30 pm Monday – Friday and at the weekends as required by the operator. The gates will be locked after hours.

All areas of the RRPP will be closed Easter Friday, Christmas Day, and ANZAC day until 1pm.

Some parts of the site will be in operation 24/7. This will include the mechanical aeration plant of the OPF bunkers and general traffic/other activities as required by operational needs.

All operations will comply with the noise limits established for the site through the site designation in the 2GP. An acoustic assessment has been completed for the RRPP to assess both likely day time and nighttime operations to confirm compliance with the designation noise condition is achievable (GHD, 2024C).

## **6.2 Traffic and parking**

An Integrated Transport Assessment (ITA) has been completed for the project and provides further details on the traffic systems and effects on the wider road network (GHD, 2024B). In summary, a speed limit of 20km/ per hour will be enforced on the site. ESL staff will restrict the number of vehicles permitted to off-load at any one time.

All visitors to the site not using the public facilities (recycling drop-off, rummage store etc) will report to the Site Office upon arrival. They will sign in and undergo an induction as per ESL procedure.

Pedestrian and cycling access will be limited to safe zones of the site and signage/road markings will be installed to direct those users.

All vehicles entering the site with waste, organics, or commercial recycling will go over the weighbridge and will be questioned by the weighbridge operator.

The following traffic movements are expected associated with the RRPP development. How the overall traffic numbers will vary from current traffic numbers, taking into account the various waste streams, as is described in the ITA. :



## 6.2.1 Kerbside collection traffic

- Kerbside Refuse: 6 trucks, (4 x 3 Axle Sideloads, 2 x 2 Axle Rearloads) 12 offloads per day. (each truck will leave site in morning, return during day to unload, leave site and return at end of day, tip off and park up). Note that these trucks are currently already going to the Green Island landfill to offload their waste.
- Kerbside Glass: 5 trucks (all 2 axle) 5 offloads per day
- Kerbside Recycling: 4 trucks (3 x 3 Axle Sideloads, 1 x 2 Axle rearload) 8 offloads per day
- Kerbside Organics: 7 trucks (5 x 3 Axle Sideloaders, 2 x 2 Axle REL) 9 offloads per day

## 6.2.2 Off-take traffic

- Compost off-take: Approx 5800 tonnes per annum, 193 truck-and-trailer units per annum. This will not be a steady flow and tends to leave in large order lots.
- Glass off-take: Approx 3500 tonnes per annum, 116 truck and trailer loads per annum.
- Waste once Landfill Closes.
- Recycling commodities from MRF: approximately 3750 tonnes per annum after residual removed, 125 Truck and Trailer loads per annum.

## 6.3 Management of odour, dust, noise, litter, vermin, and birds

### 6.3.1 Odour

An air quality report has been completed for the RRPP development (PDP 2023) and provides a detailed assessment of air quality effects and necessary mitigation measures. The report has incorporated pre-application feedback from the ORC specialist.

In summary, in accordance with the existing air discharge consents for the landfill site, the site will be managed such that there will be no odour or dust discharge beyond the site boundary which could be considered noxious, dangerous, offensive, or objectionable. The MRF, BWTS and Hazardous Waste buildings have roller doors to be able to enclose the buildings when not in operation.

The weighbridge operator may question the driver about the nature of the load to be disposed.

All staff working at the facility will have training, which will include the requirements of the resource consents, control of odorous waste, odour monitoring, housekeeping procedures, and contingency measures.

Staff will undertake odour monitoring following ESL odour monitoring procedures each day of operation. This will be conducted along the site boundary using ESL Odour and Litter Monitoring Record (ENV-05-028 – see Appendix E). Should odour be identified at the RRPP boundary, the source will be identified and mitigated.

#### **Odour Contingency Measures:**

In the event that excessively odorous material is deposited, and/or odour can be detected off site (outside of the RRPP boundary), or a complaint is received, the site manager will undertake the following measures as required to mitigate the odour:

- Immediately cover the load;
- Apply odour suppressant chemical to the source (e.g. Kemsol or similar);
- Remove the offending waste and transport directly to landfill (either Green Island or remote destination,); and
- Report the odour incident using the incident reporting and investigation procedures.

Additional odour control measures with respect to the composting system are described in Appendix E

### 6.3.2 Dust

The site access roads and transfer area surfaces will be sealed to minimise dust within the site. Vehicle speeds on site will be limited to a maximum of 20 km/hr to minimise dust pollution. This speed limit will be clearly sign posted around the site.

The weighbridge operator and transfer station staff will question the driver about the nature of the waste dropped off and whether it is likely to be dusty. Excessively dusty loads will not be accepted at the site.

Sweeping of the drop-off areas and routes will be undertaken as necessary.

If dust is being emitted, the tipping of the load will be temporarily stopped until the load is dampened using water, or if in the opinion of the site manager the load is unacceptable, the tipping of the load will be stopped, and the load refused entry and directed to the landfill for disposal.

If unsealed areas of the site are emitting dust, sprinklers will be used to wet down surfaces.

As noted in Section 3.3, the BWTS will including a misting system to suppress dust within the building.

### 6.3.3 Noise

As discussed in section 6.1.5, an acoustic assessment has been completed for the RRPP to assess both likely day time and nighttime operations to confirm compliance with the designation noise condition is achievable (GHD, 2024C). The site manager will ensure that all noise requirements under the Green Island landfill designation are met. The designation requires that:

*Noise generated by any activity on the site shall comply with the following standards at the boundary of this site: 55 Day-time/40 Nighttime dBA (NB These levels are subject to an adjustment of minus 5 dBA for noise emissions having special audible characteristics).*

The site manager is responsible for ensuring that all equipment on site is adequately maintained.

The following noise control measures have been identified:

- Building design. The MRF and BWTS Buildings will not have any doors in the South façade facing the residential area; and
- The glass bunkers will be positioned as far as possible from the residential areas.

### 6.3.4 Litter

RRPP customers will be encouraged to adequately cover their loads to avoid litter escaping from carrier vehicles. The covers will be taken off once the vehicle has entered the offloading area.

Perimeter fencing with litter netting will be maintained on site.

Litter checks within the site boundary will be undertaken by site staff and recorded on the ESL Odour and Litter Monitoring Record (ENV-50-028). Any windblown litter will be picked up as soon as practicable and returned to the facility for recycling or disposal.

Any complaints regarding litter nuisance will be investigated and, if required, litter will be collected as soon as practicable.

### 6.3.5 Vermin

The best practice operational procedures of the site aim for fast turn-around of incoming organic waste streams. Nuisance caused by vermin (e.g., flies or rodents) is not expected.

An accredited pest control contractor will be engaged to put in place and service an ongoing pest control programme.

Buildings will be designed in a way that minimises opportunities for vermin entry. This will include sealing any gaps or openings in the facility's structure, ensuring doors and windows are properly screened.

### 6.3.6 Birds

The MRF, BWTS and Hazardous Waste buildings will be fully enclosed and internally lined to avoid perching spots for birds. Any control measures are likely to focus on excluding birds from the building, and/or any roosting and loafing sites within the property. In addition, a Southern Black Backed Gull (SBBG) Management Plan for Dunedin and Environs is being developed in accordance with the Smooth Hill landfill consent condition requirements. This management plan will consider long-term management of SBBG across the region, including at the Green Island landfill site.

The design for the OPF is based on the successful bird-management strategies employed at the ESL Hampton Downs facility. At Hampton Downs, an Aerated Static Piles (ASP) OPF is in operation similar to the operation proposed for the RRPP. It features covered receiving areas, open bunkers, and a maturation stage. This ASP system has high-flow aeration bunkers ensuring quick material decomposition and maximum odour control, thereby minimizing issues with vermin, including birds. Additional measures for bird control in an ASP system include:

- A target mix ratio of 1 part food to 3 parts garden waste by weight, leaving little to no visible food scraps for birds to scavenge.
- During the active processing phase, the compost piles are maintained at a minimum temperature of 55°C. Intermittently hot air is blown through and circulated through the piles, containing specific gases that it appears are repellent to birds.
- If required, irrigation systems can be employed to deter birds further.
- If required, ASPs can be covered with bio-cover material, a 300mm layer of composted mulch, or screened overs.

Internationally, this high-aeration approach has proven effective at deterring bird scavenge. Suppliers of the systems have confirmed that high-aeration facilities located near landfills with known bird problems do not experience bird-related issues.

Other options for excluding birds include the use of artificial covers. However, facilities using artificial covers tend to attract birds as the lower aeration rates required for these covers make them more appealing perches for birds. Therefore, using artificial covers is not proposed as a mitigation measure. Furthermore, these systems involve lower-aeration processes, which slow down the composting rate and necessitate more bunkers and can retain food in a state attractive to birds for longer.

## 6.4 Complaints handling

Any complaints regarding noise, litter, dust, odour, or pests received by the site will be logged and investigated in accordance with ESL's complaints handling procedure (ENV-50-030) Environmental Complaint Handling Procedure.

## **7 CONCLUSIONS**

This report provides information on the design and operation of the RRPP in support of a resource consent application to ORC and an outline plan application to DCC for construction and operation of the new facilities at the Green Island landfill proposed as part of the Waste Futures Project. This report also forms the basis of the assessment of effects completed by many of the technical assessments.

## 8 REFERENCES

Boffa Miskell, 2023, Waste Futures – Green Island – Resource Recovery Park Precinct – Landscape and Visual Assessment Report

GHD, 2021 – Green Island Landfill - Resource Recovery and Processing Precinct | Environmental Site Investigation Factual Report

GHD, 2024A – Waste Futures – Green Island – Resource Recovery Park Precinct – Groundwater Technical Assessment

GHD, 2024B – Waste Futures – Green Island – Resource Recovery Park Precinct – Integrated Transport Assessment Report

GHD, 2024C – Waste Futures – Green Island – Resource Recovery Park Precinct – Noise Assessment Report

GHD, 2024D – Waste Futures – Green Island – Resource Recovery Park Precinct – Storm Water Management Report

GHD 2024E – Waste Futures – Green Island – Resource Recovery Park Precinct – Management Plans

Pattle Delemore Partners Limited (PDP), 2023 – Green Island Resource Recovery Park Precinct – Air Quality Assessment

Health and Safety at Work Act 2015

Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

Waste Minimisation Act 2008

## 9 LIMITATIONS

This report has been prepared by GHD for ESL and DCC. The matters discussed in this report are limited to those specifically detailed in the report and are subject to any limitations or assumptions specially set out.

GHD has prepared this report based on information provided by ESL and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this report. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

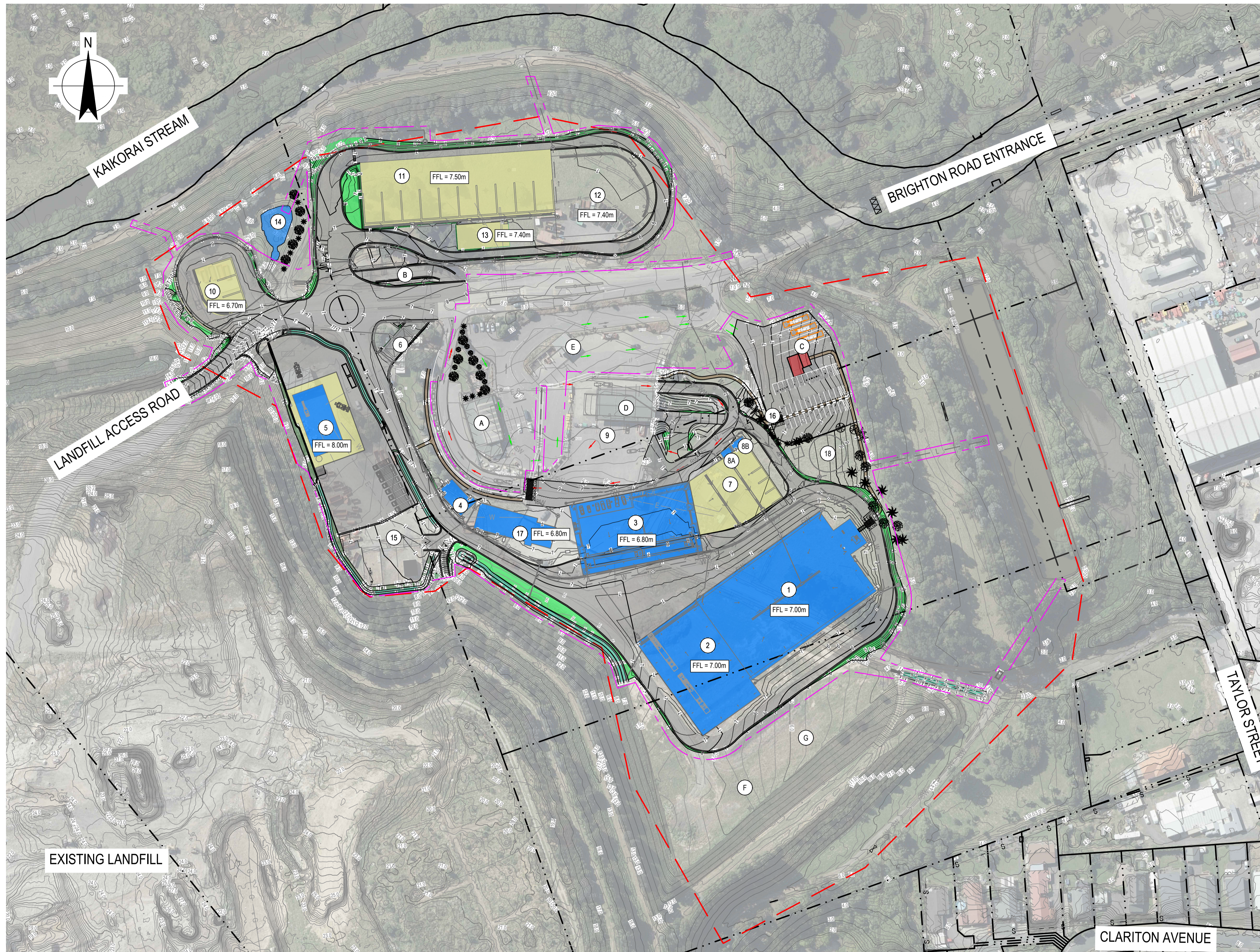
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# Appendices

# Appendix A

## Proposed Site Layout





LEGEND - PROPOSED	
	SITE DEVELOPMENT BOUNDARY
	NEW BUILDING
	NEW CONCRETE PAD
	NEW FOOTPATH
	NEW ROAD / ASPHALT AREA
	GRASSED AREA
1	MRF - MATERIALS RECOVERY FACILITY (HT: 13.0m)
2	MRF APRON
3	BWT - BULK WASTE TRANSFER (HT: TBC)
4	OSF - OFFICE AND STAFF FACILITY
5	ORB - ORGANIC RECEIVING BUILDING (HT: 13.0m)
6	TWB - TRUCK WASH BAYS (AFTER CURRENT OPERATOR VACATED)
7	CDS - CONSTRUCTION AND DEMOLITION SORTING PAD
8A	HWS - HAZARDOUS WASTE STORAGE
8B	HWD - HAZARDOUS WASTE DROP-OFF
9	GWD - GREEN WASTE DROP-OFF PAD
10	GLB - GLASS BUNKERS
11	OPF - ORGANIC PROCESSING FACILITY BUNKERS
12	OPM - ORGANIC PROCESSING MATURATION (3004.160m <sup>2</sup> )
13	MAP - MECHANICAL PLANT
14	POND
15	TPC - TRUCK PARK COMPOUND
16	PEF - PARKING & EDUCATIONAL FACILITY
17	ECO - ENVIRONWASTE COMMERCIAL OFFICE
18	FIRE WATER STORAGE TANK
	TANKS
	PAID DOMESTIC DROP OFF LOOP
	FREE DOMESTIC DROP OFF LOOP
	TREES AND SCRUB
LEGEND - EXISTING	
	LEGAL BOUNDARY
A	EXISTING RUMMAGE STORE
B	EXISTING WHEEL WASH
C	EXISTING EDUCATION CENTRE
D	EXISTING DOMESTIC WASTE TRANSFER STATION
E	RECYCLING DROP-OFF
F	DIVERTED MATERIAL STORAGE
	LANDFILL PLANT MAINTENANCE & STORAGE
	EXISTING ROAD
G	EXISTING BUILDING
W	EXISTING GAS
	EXISTING WATER
S	EXISTING STORMWATER
E	EXISTING SEWER
L	EXISTING ELECTRICITY
	EXISTING LEACHATE

PROPOSED SITE LAYOUT PLAN  
SCALE 1:1000

Rev	Description	Checked	Approved	Date
E	PRELIMINARY ISSUE	MR*	RP*	16.10.23
D	FOR CONSENT	MR*	RP*	05.10.23
C	FOR CONSENT	MR*	RP*	05.07.23
B	CONCEPT FOR TENDER	MR*	RP*	04.05.23
A	PRELIMINARY - FOR CLIENT REVIEW	MR*	RP*	31.03.23

Author: R. GERONIMO    Drafting Check: G. DOUGHERTY\*  
Designer: K. ATKINS    Design Check: M. ROUJON\*



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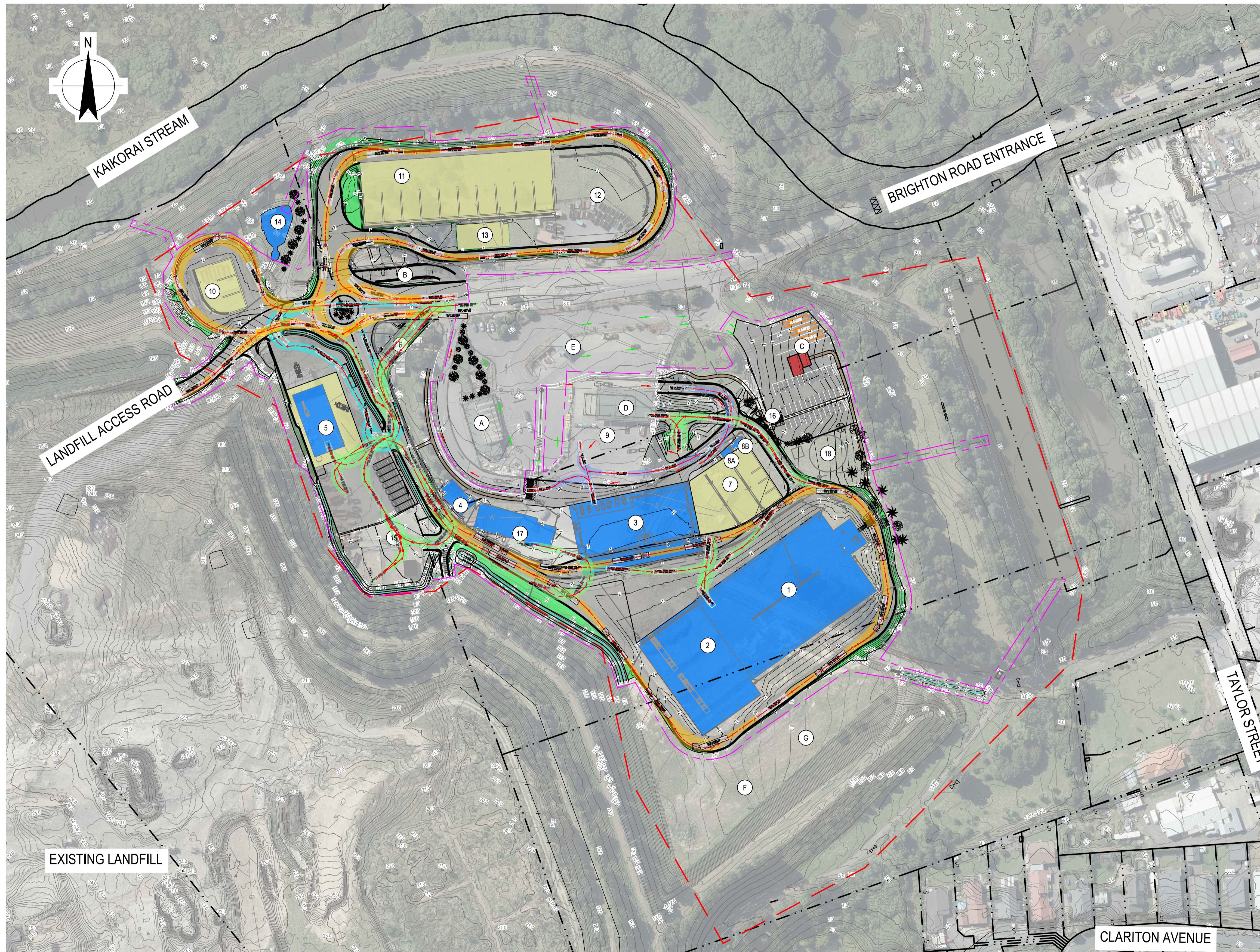
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Project No. 12593786

Client: ENVIROWASTE SERVICES LTD (ESL)  
Project: DUNEDIN RRP ALL SITE  
Status: PRELIMINARY

Drawing Title: PROPOSED SITE LAYOUT PLAN  
Status Code: S3  
Drawing No.: 12593786-ALL-C002  
Rev: E

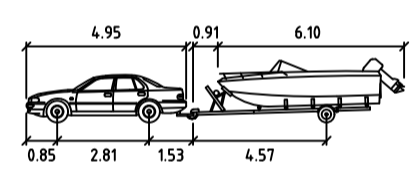
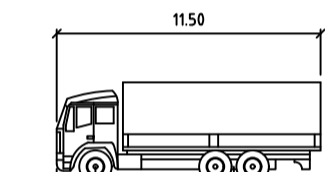
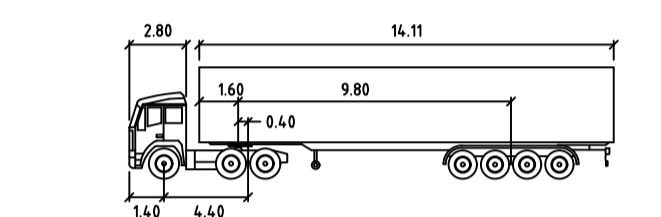
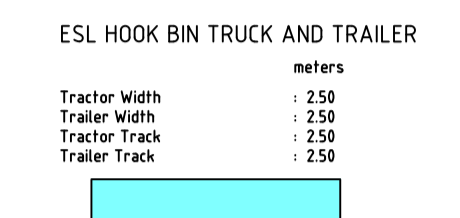


LEGEND - PROPOSED	
	SITE DEVELOPMENT BOUNDARY
	NEW BUILDING
	NEW CONCRETE PAD
	NEW FOOTPATH
	NEW ROAD / ASPHALT AREA
	GRASSED AREA

**NOTES:**

1. VEHICLE BODY SHOWN WITHOUT CLEARANCE.

**LEGEND - VEHICLE TRACKING:**



**VEHICLE TRACKING PLAN**  
SCALE 1:1000

Rev	Description	Checked	Approved	Date
B	PRELIMINARY ISSUE	MR*	RP*	16.10.23
A	PRELIMINARY	MR*	RP*	05.10.23

Author: R. GERONIMO    Drafting Check: G. DOUGHERTY\*  
 Designer: K. ATKINS    Design Check: M. ROUJON\*



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Project	DUNEDIN RRP ALL SITE
Status	PRELIMINARY

Drawing Title	VEHICLE TRACKING PLAN
Status Code	S3
Drawing No.	12593786-ALL-C003

Size **A1**  
Rev **B**

# Appendix B

Site 3D View



**UNDER REVISION**

Rev	Description	Date
Author	Author	Drafting Check
Designer	Designer	Design Check
		Checker

Plot Date: 6/20/2023 3:52:19 PM

File Name: Autodesk Docs://12593786 - Dunedin RRP/12593786-Dunedin RRP-ARC-Enscape site\_R22.rvt


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Project	<b>DUNEDIN RRP</b>
Status	

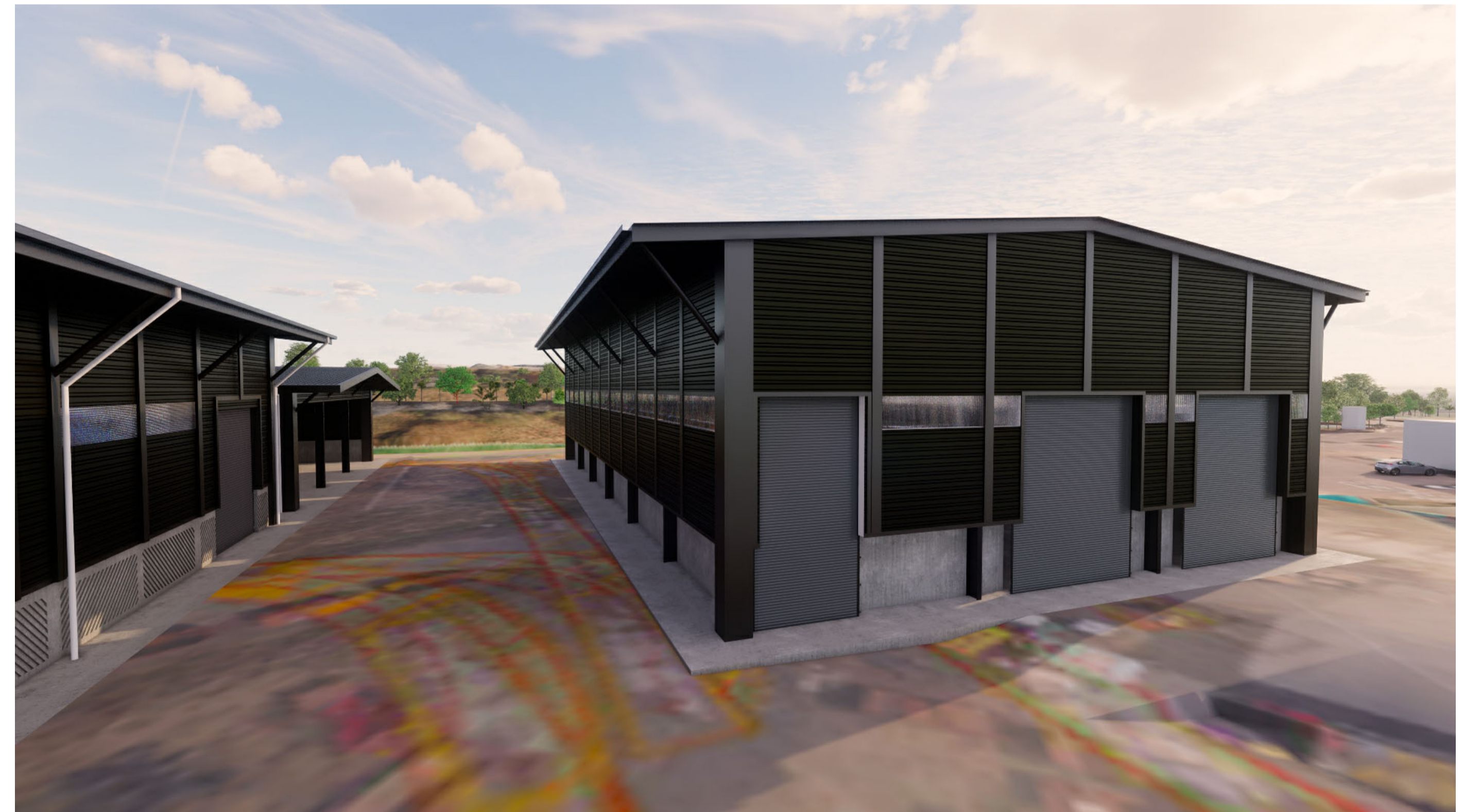
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Status Code	

Drawing No.  
**12593786-ALL-A010**

Size  
**A1**  
 Rev  
**UR**

# Appendix C

## Building Layouts



**UNDER REVISION**

Rev	Description	Date
Author	MK	Drafting Check
Designer	AT	Design Check
		TR
		BL



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12593786

Client **ENVIROWASTE SERVICES Ltd (ESL)**  
Project **DUNEDIN RRP BWTS**  
Status **FOR REVIEW**

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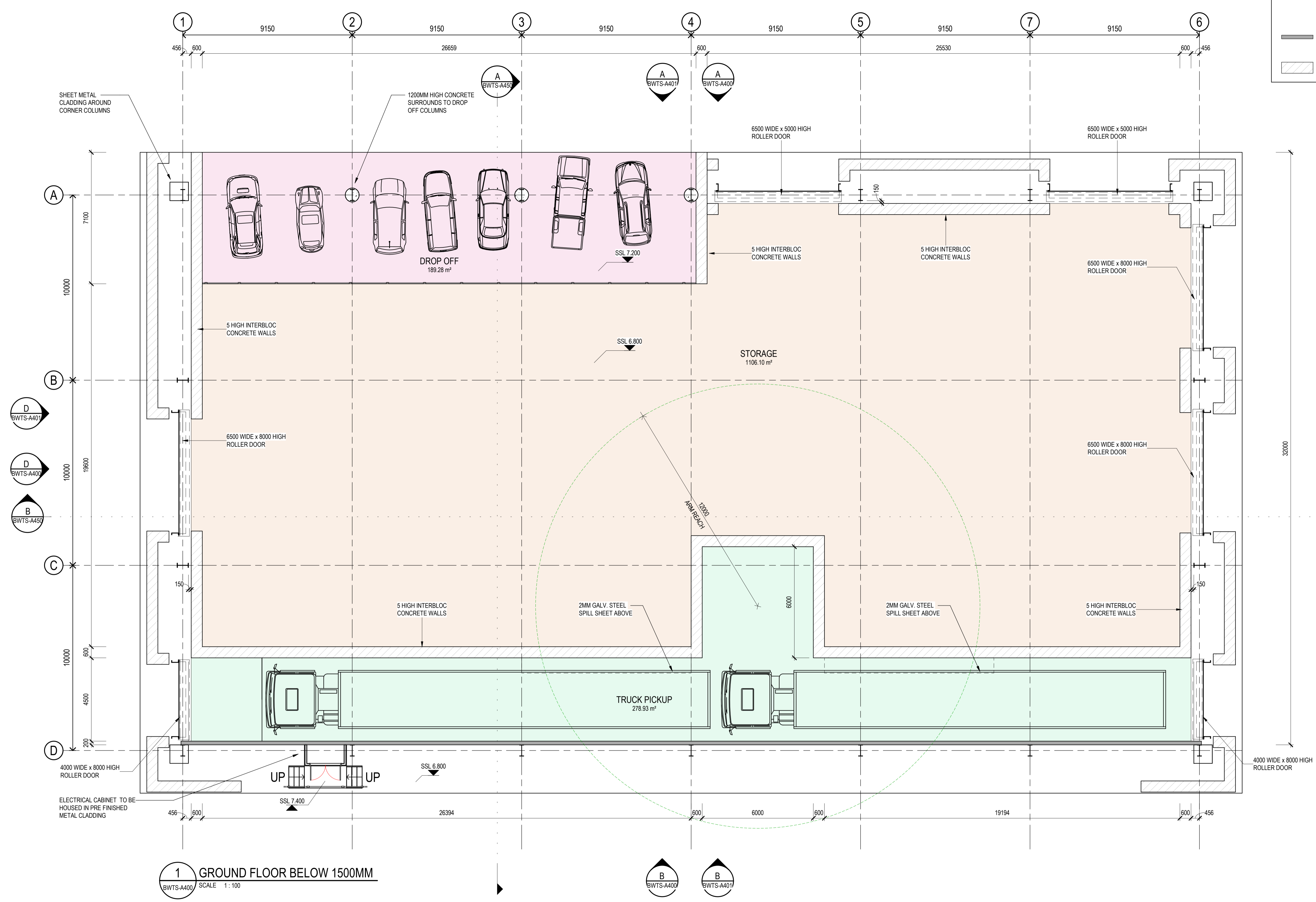
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Size **A1**

Rev **UR**

LEGEND	
	200MM 2400MM HIGH PRECAST CONCRETE WALL
	1200X600X600 INTERBLOC WALL



<b>UNDER REVISION</b>		
Rev	Description	Date
Author	MK	Drafting Check
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		TR
		BL

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Project **DUNEDIN RRP BWTS**

Status **FOR REVIEW**

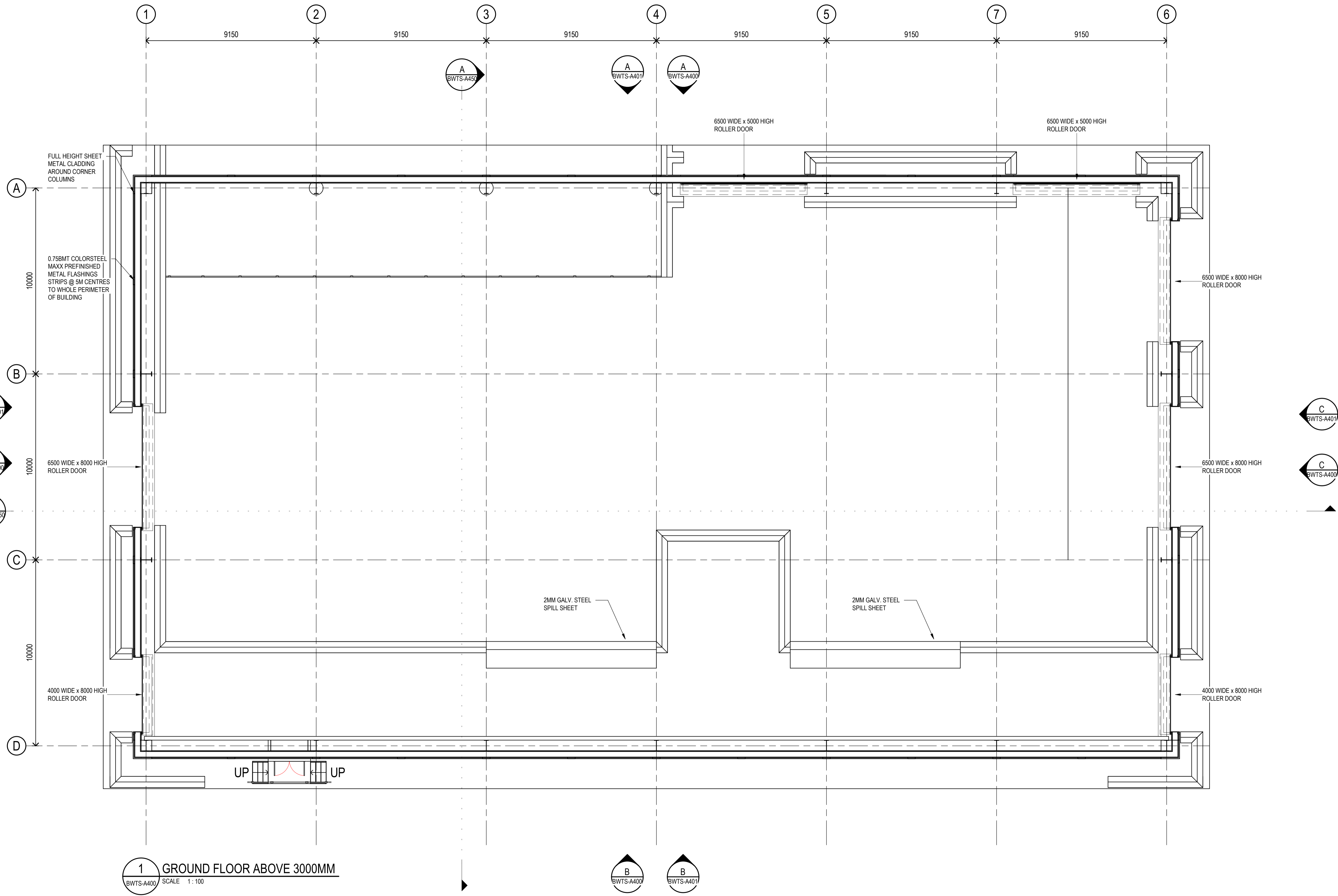
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Drawing No. **12593786-BWTS-A100**

Status Code **01**

Size **A1**

Rev **UR**



**UNDER REVISION**

Rev	Description	Date
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Designer	AT	
Drafting Check	TR	
Design Check	BL	



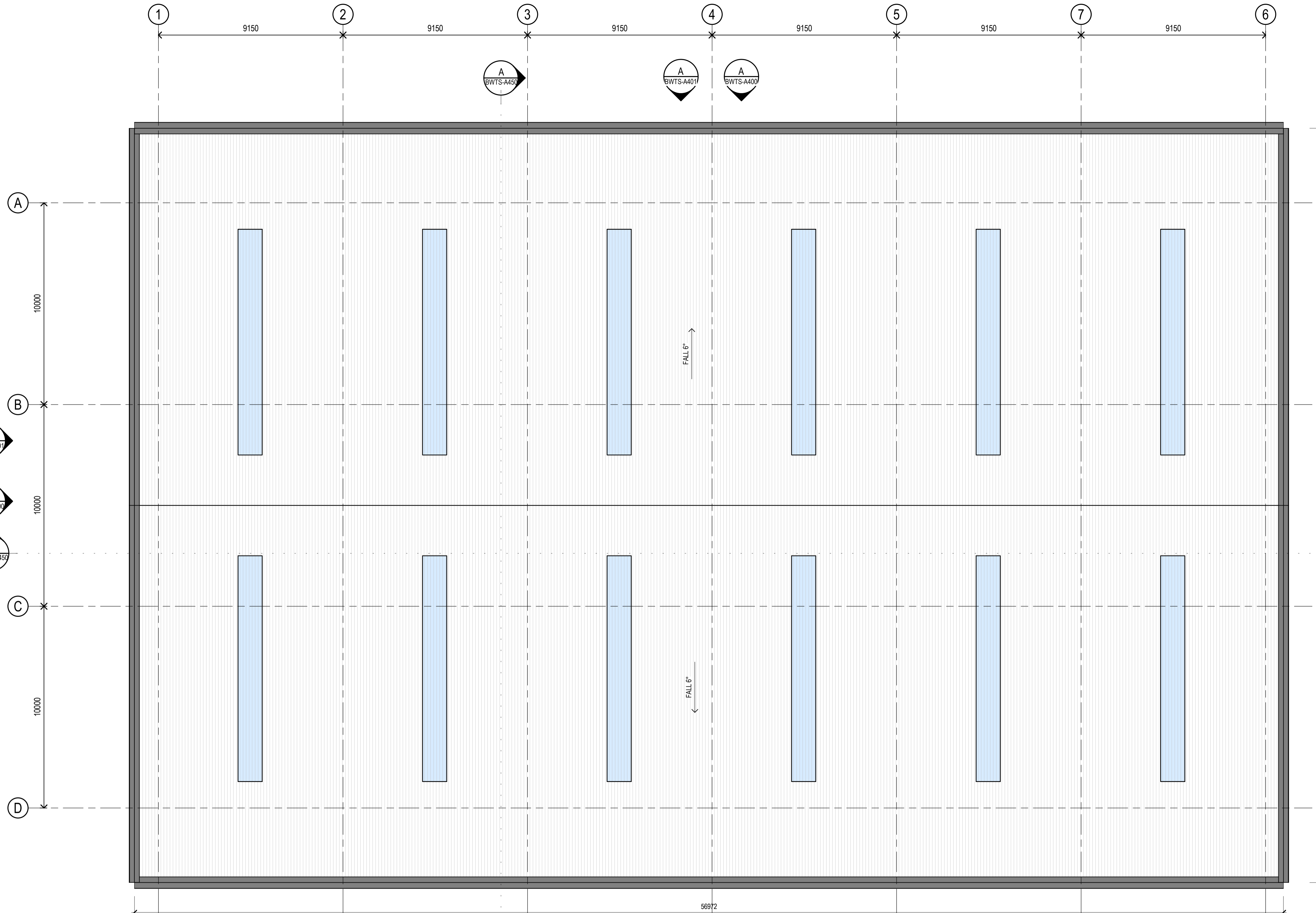
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Project	DUNEDIN RRP BWTS
Status	FOR REVIEW

Drawing Title: GA PLANS - ABOVE 3000MM

Drawing No. 12593786-BWTS-A101

Size A1  
Rev UR





1 ROOF PLAN  
 BWTS-A400 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
A	Revision 1	Date 1

Author MK      Drafting Check TR  
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 Project **DUNEDIN RRP BWTS**  
 Status **FOR REVIEW**

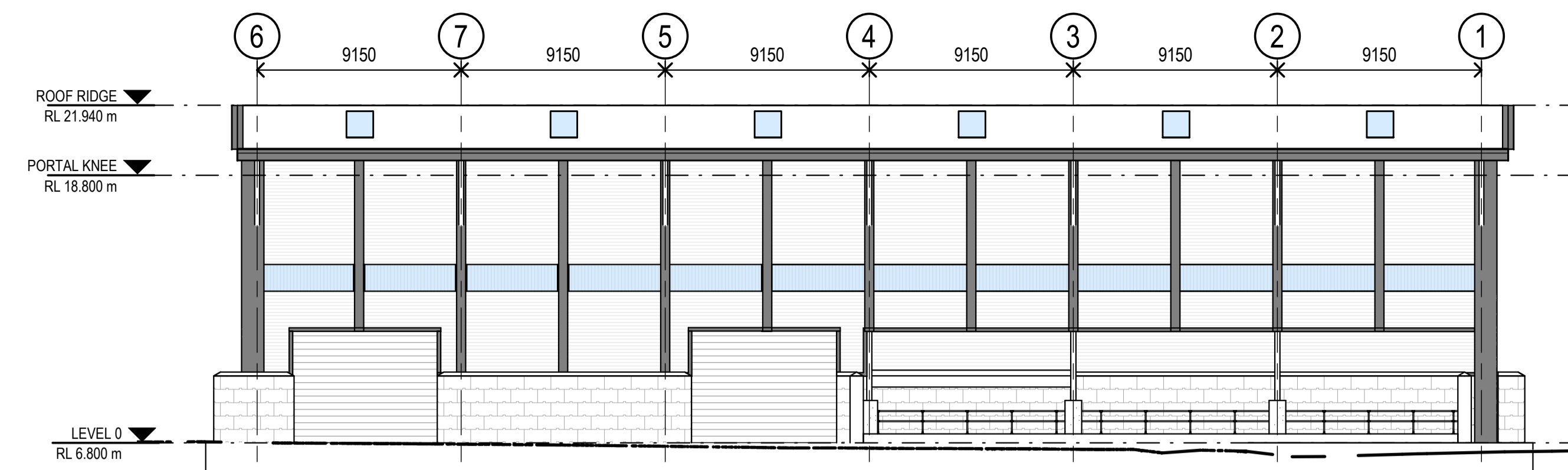
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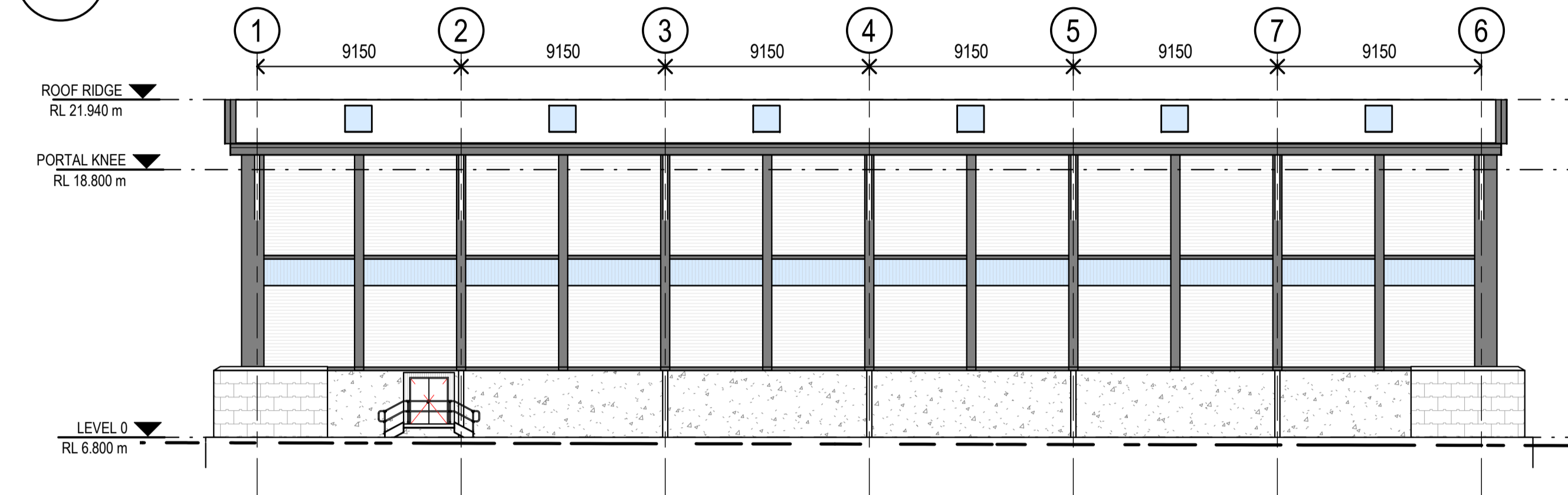
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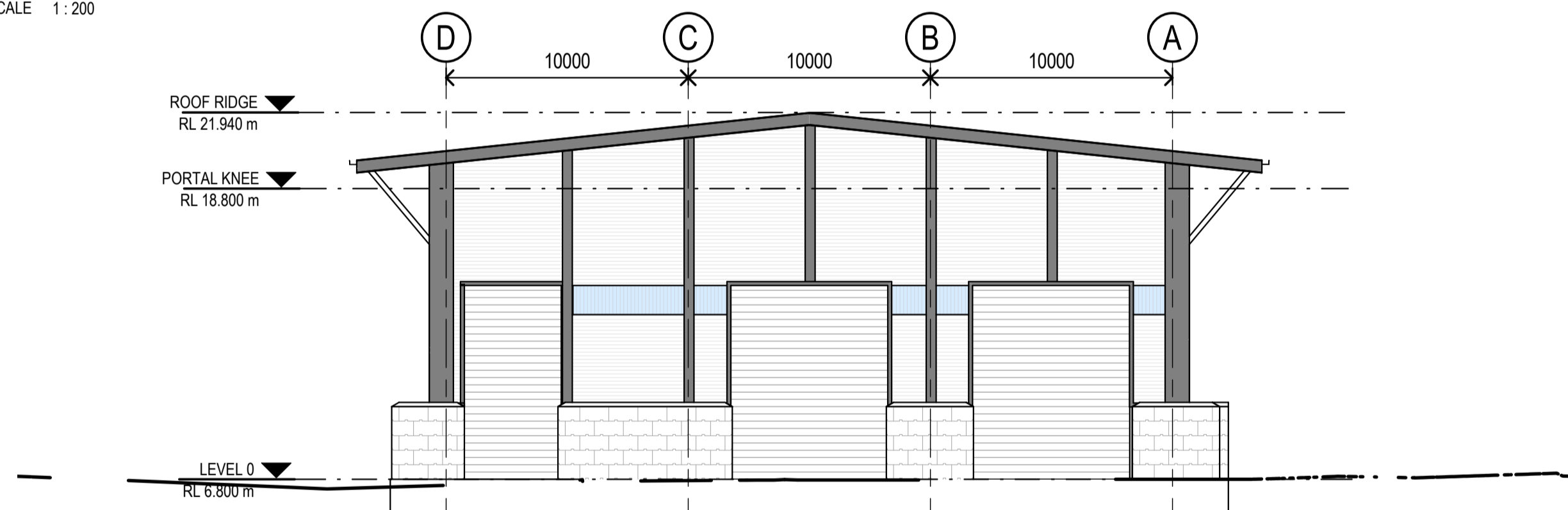
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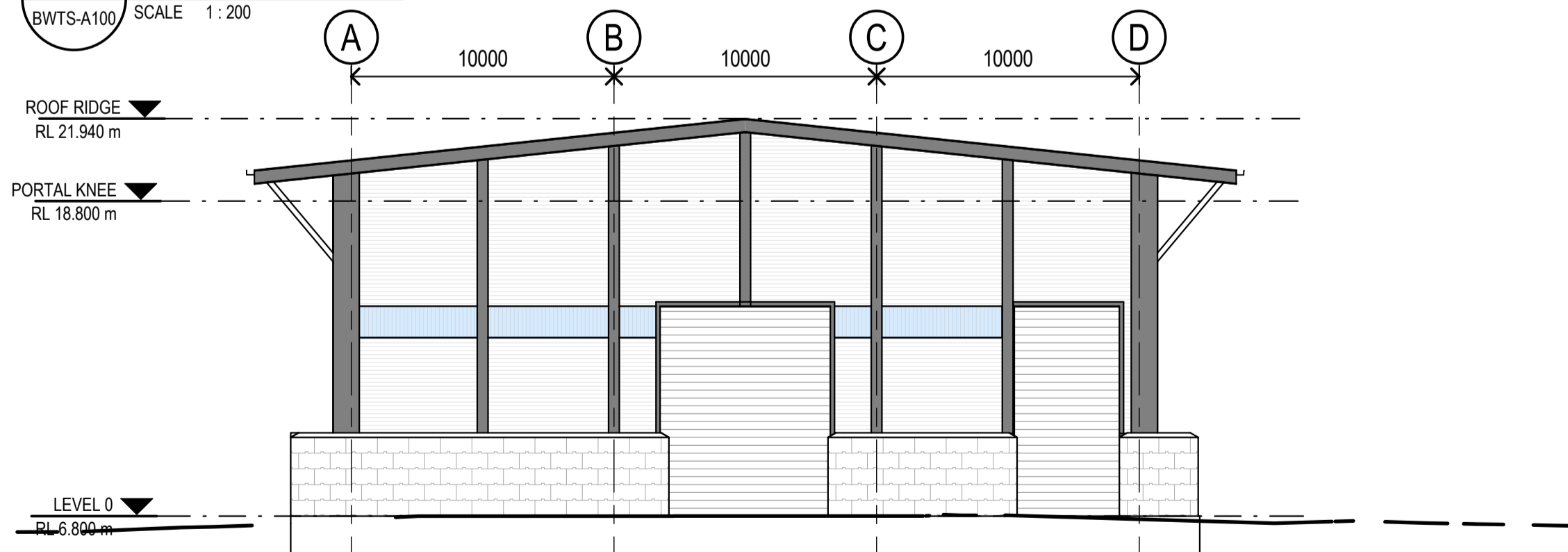
**A NORTH ELEVATION**  
 BWTS-A100 SCALE 1:200



**B SOUTH ELEVATION**  
 BWTS-A100 SCALE 1:200



**C EAST ELEVATION**  
 BWTS-A100 SCALE 1:200



**D WEST ELEVATION**  
 BWTS-A100 SCALE 1:200

**LEGEND**

- DIMOND 0.75BMT PREFINISHED BB900 PROFILED METAL CLADDING FIXED INTERNALLY & EXTERNALLY TO STEEL GIRTS/PURLINS.
- TRANSLUCENT PROFILED CLADDING FIXED INTERNALLY & EXTERNALLY TO STEEL GIRTS/PURLINS.
- 0.75BMT COLORSTEEL MAXX PREFINISHED METAL FLASHINGS
- 200MM 2400MM HIGH PRECAST CONCRETE WALL
- 1200X600X600 INTERBLOCK WALL

UNDER REVISION

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Client **ENVIROWASTE SERVICES Ltd (ESL)**

Project **DUNEDIN RRP BWTS**

Status **FOR REVIEW**

Project No. **12593786**

Drawing Title **GA ELEVATIONS**



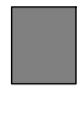


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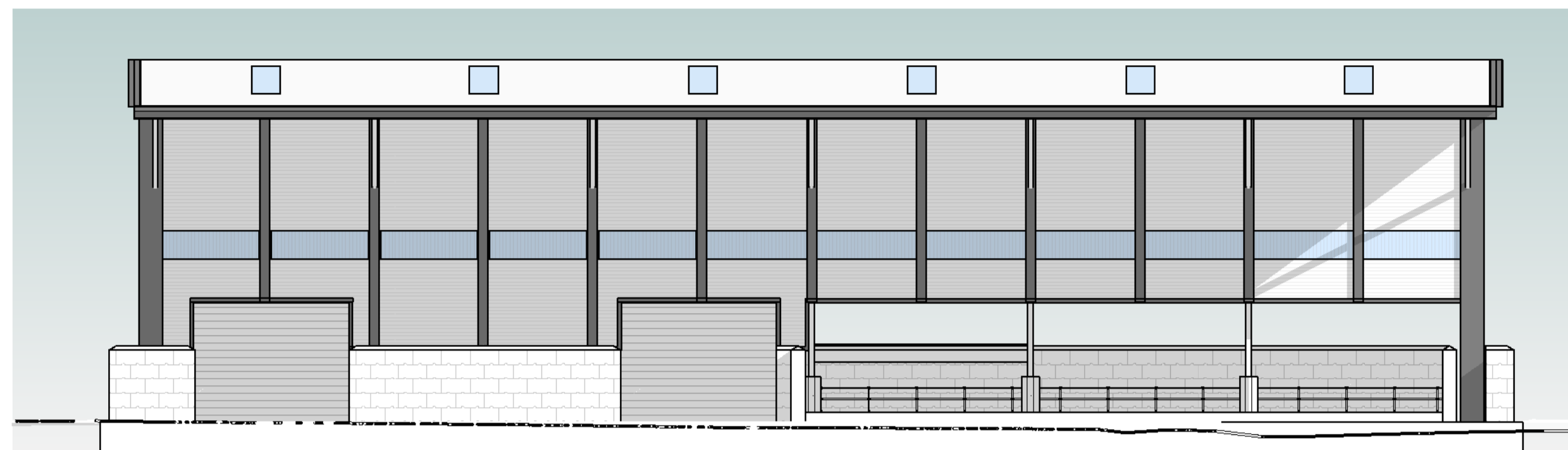
Drawing No. **12593786-BWTS-A400**

Rev **UR**

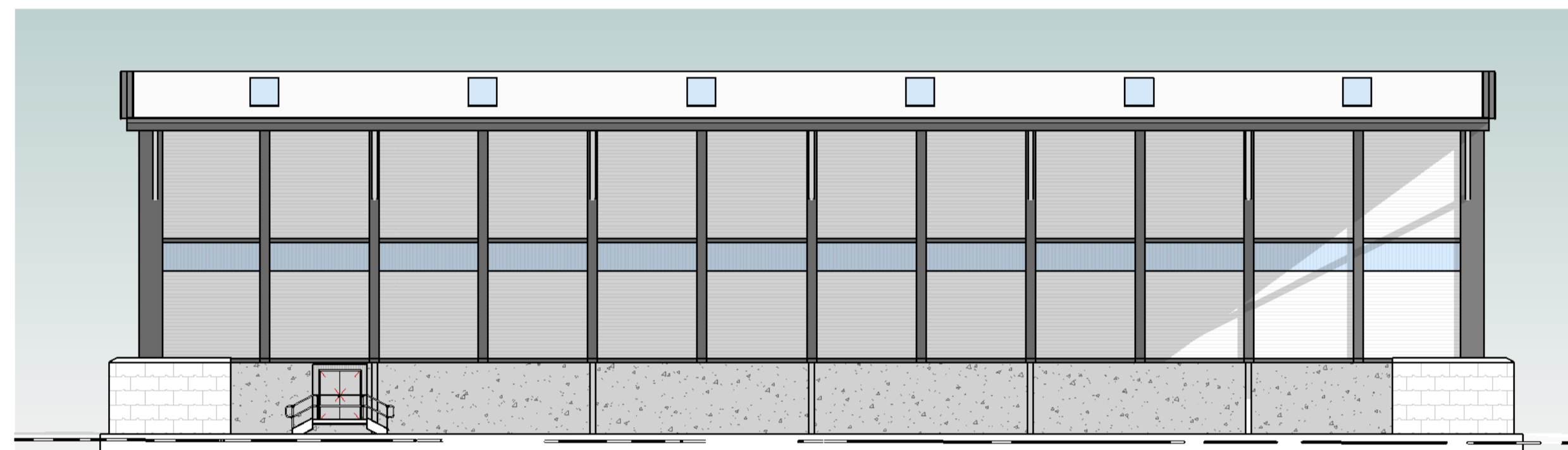
Size **A1**

**LEGEND**

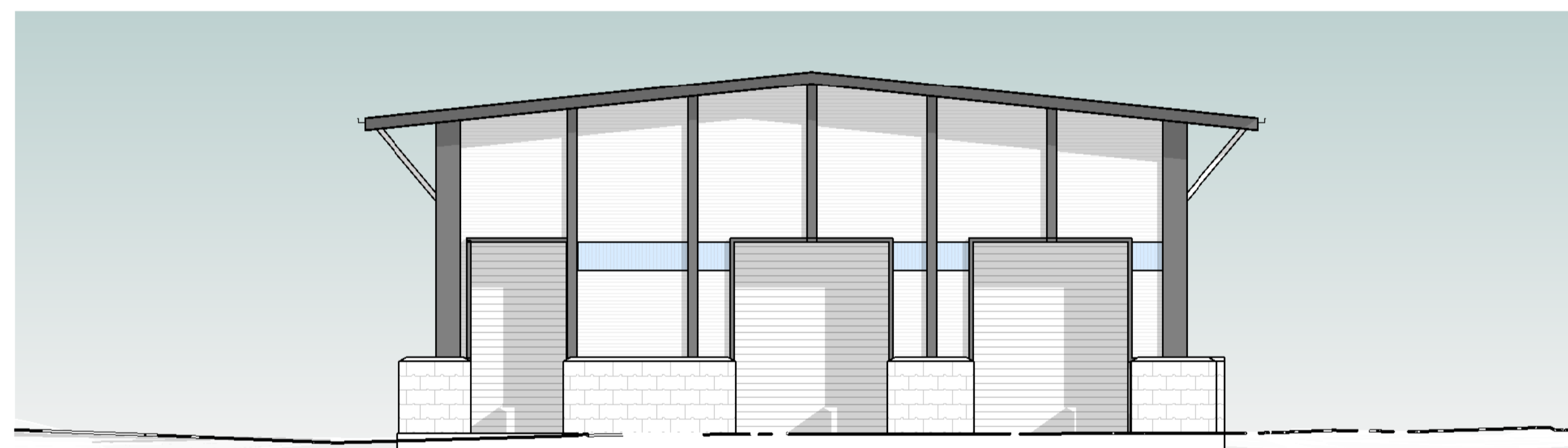
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-  TRANSLUCENT PROFILED CLADDING FIXED INTERNALLY & EXTERNALLY TO STEEL GIRTS/PURLINS.
-  0.75BMT COLORSTEEL MAXX PREFINISHED METAL FLASHINGS
-  200MM 2400MM HIGH PRECAST CONCRETE WALL
-  1200X600X600 INTERBLOCK WALL



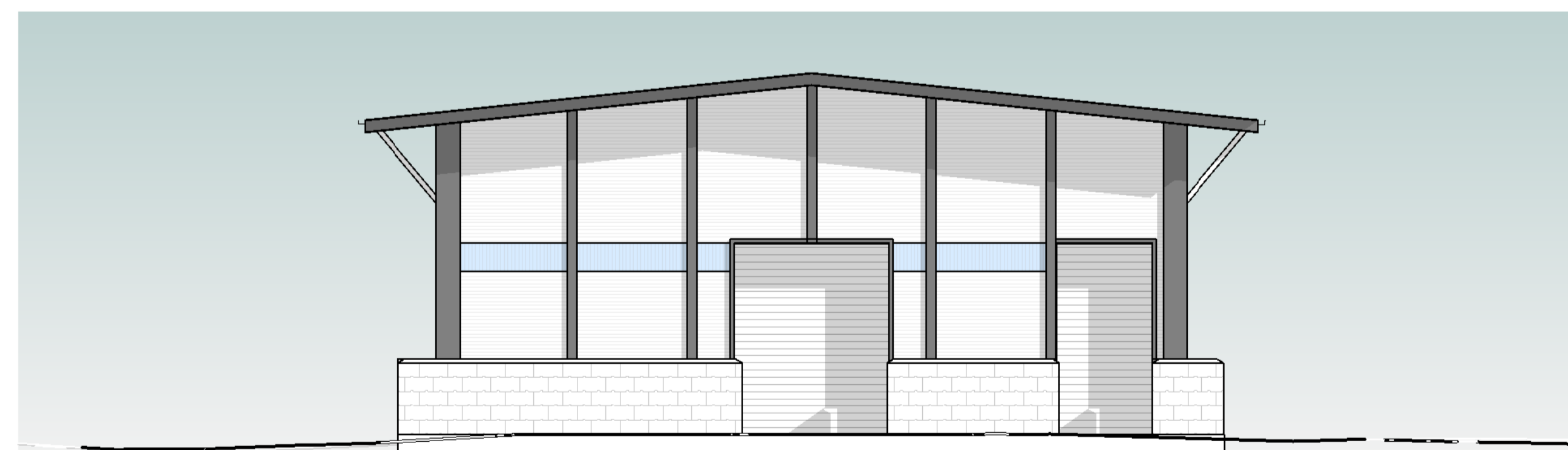
**A NORTH ELEVATION**  
BWTS-A100 / SCALE 1:200



**B SOUTH ELEVATION**  
BWTS-A100 / SCALE 1:200



**C EAST ELEVATION**  
BWTS-A100 / SCALE 1:200



**D WEST ELEVATION**  
BWTS-A100 / SCALE 1:200

Rev	Description	Date

Author Author Drafting Check  
 Designer Designer Design Check Checker

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**EnviroWaste**

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Project No.  
 12593786

Client **ENVIROWASTE SERVICES Ltd (ESL)**

Project **DUNEDIN RRP  
 BWTS**

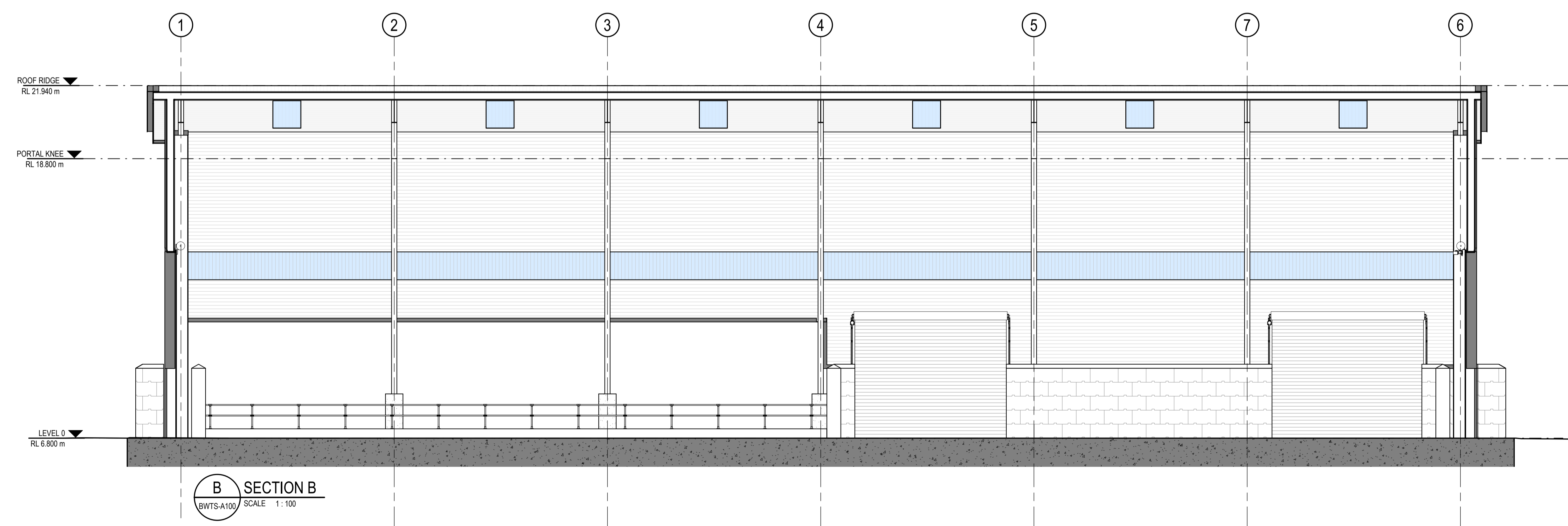
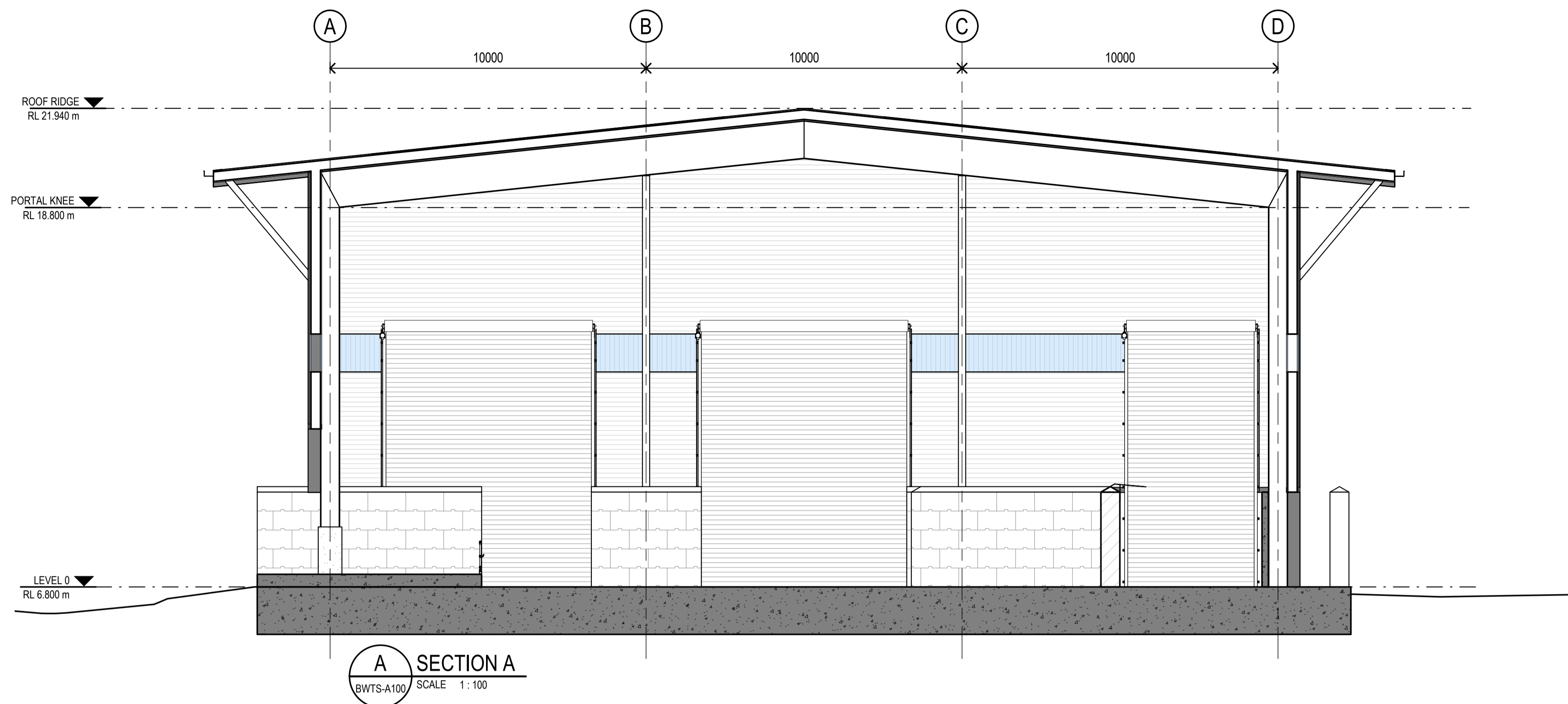
Status

Drawing Title **GA ELEVATIONS - SIMPLE**

Drawing No.  
 12593786-BWTS-A401

Size  
**A1**

Rev




**UNDER REVISION**

Rev	Description	Date
Author	MK	
Designer	AT	
Drafting Check	TR	
Design Check	BL	


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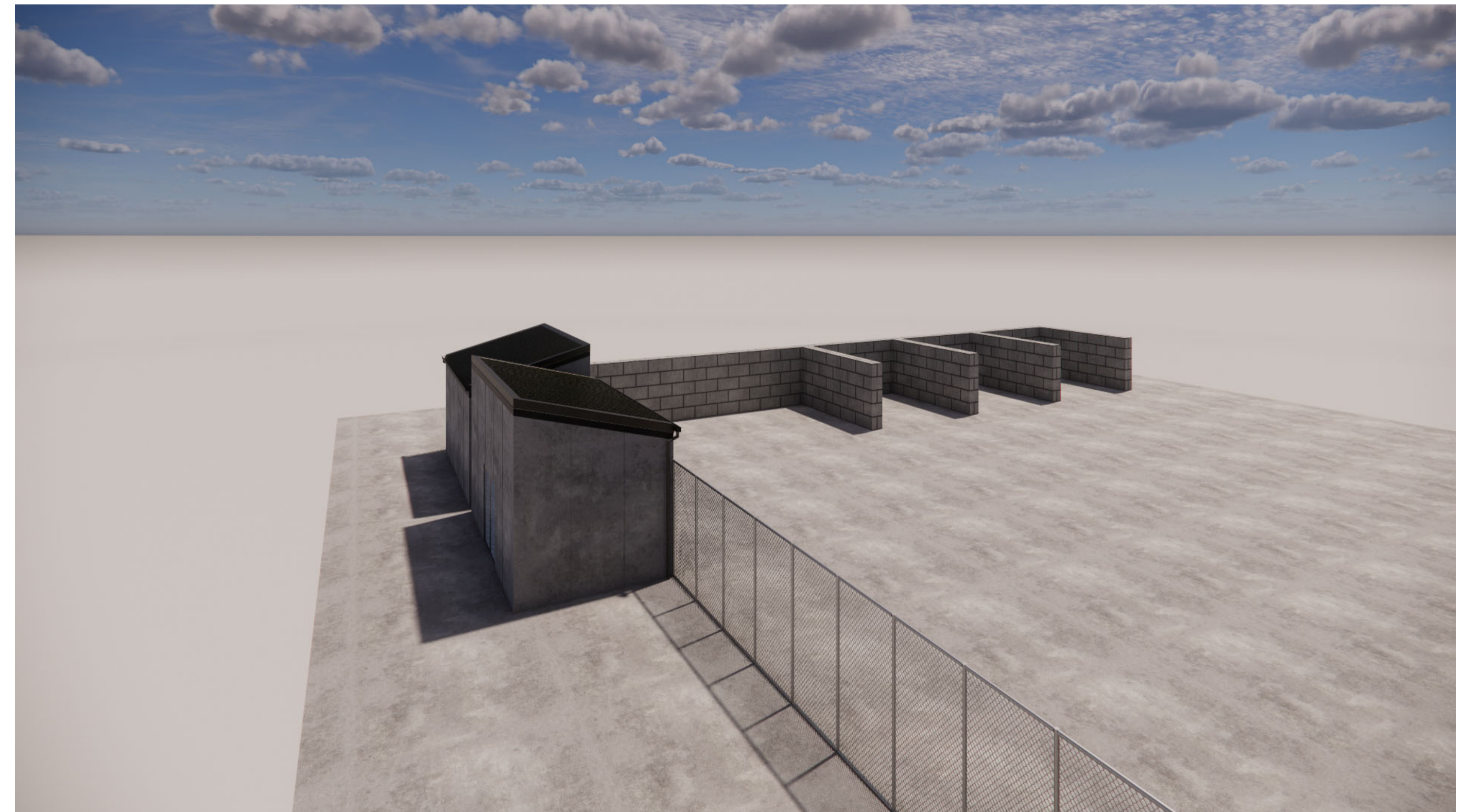
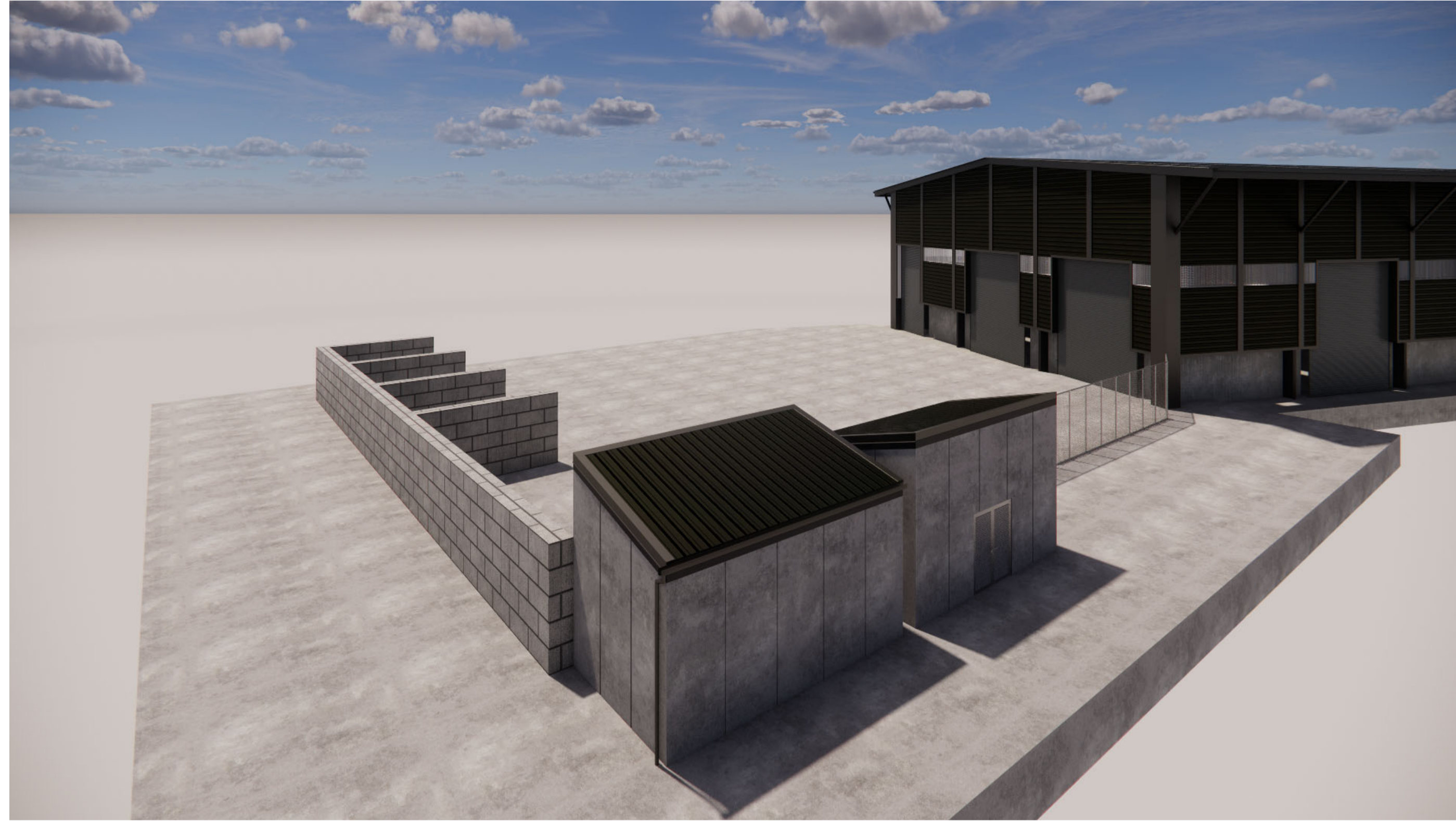

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Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	DUNEDIN RRP BWTS
Status	

Drawing Title	GA SECTIONS
Project No.	12593786
Status Code	
Drawing No.	12593786-BWTS-A450

Size  
**A1**  
 Rev  
**UR**



**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	


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Project No.  
**12593786**

Client **ENVIROWASTE SERVICES Ltd (ESL)**

Project **CDS BUNKER**

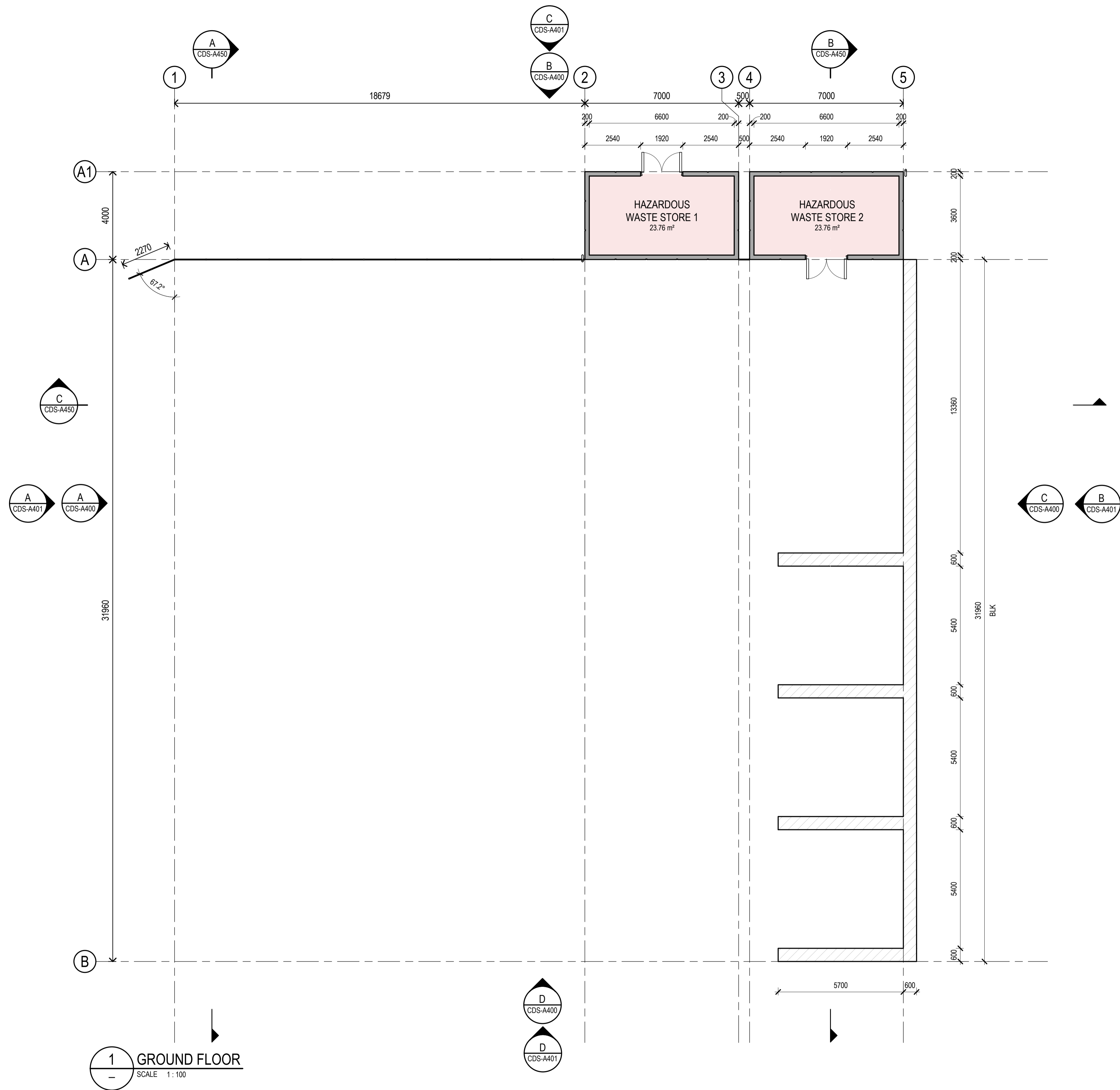
Status

Drawing Title **RENDERS**

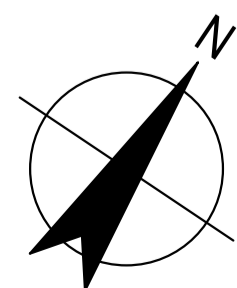
Drawing No.  
**12593786-CDS-A002**

Size  
**A1**

Rev  
**UR**



**UNDER REVISION**



Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



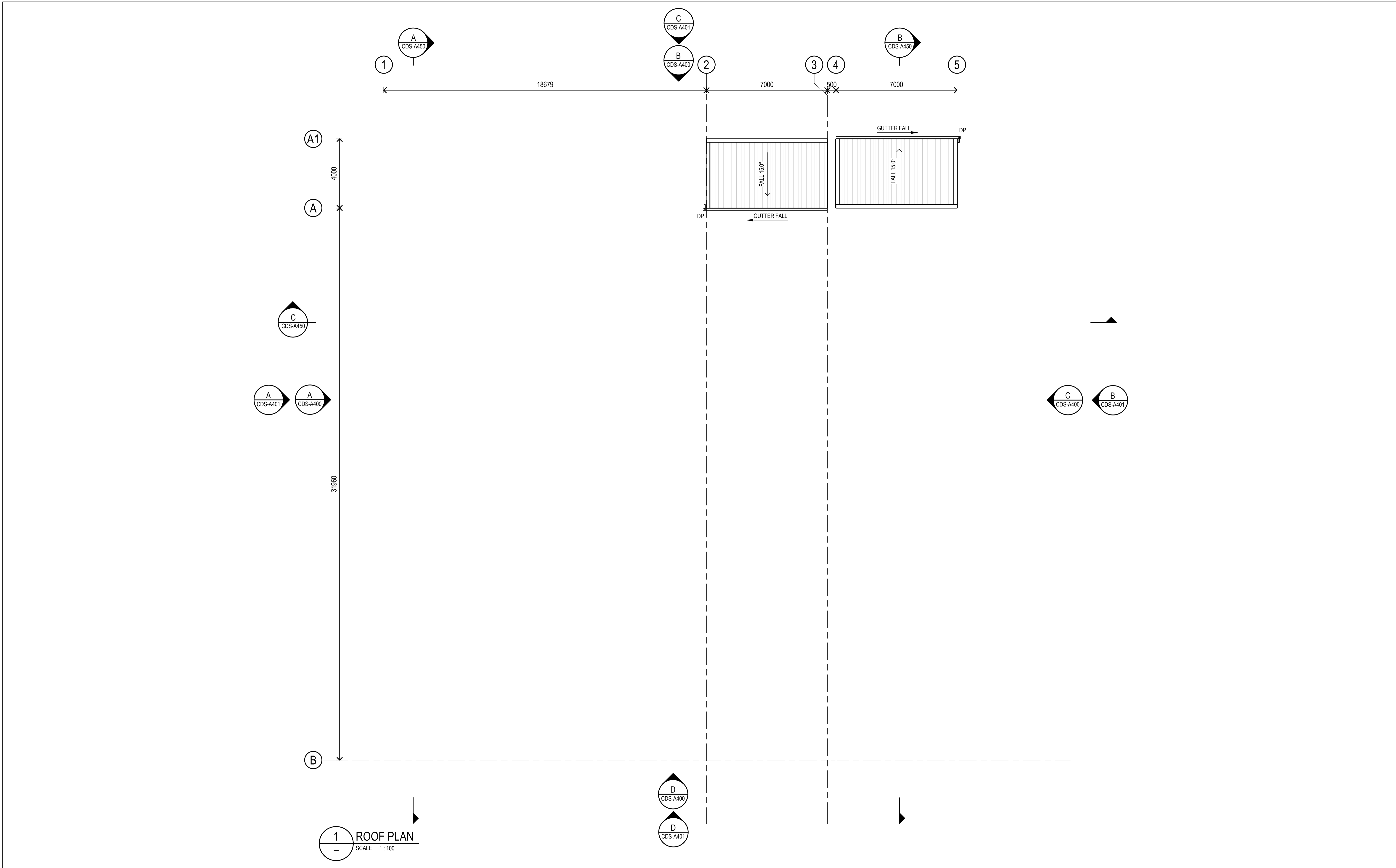
Project No.  
12593786

Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	CDS BUNKER
Status	

Drawing Title  
GA PLAN

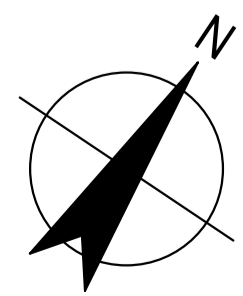
Drawing No.  
12593786-CDS-A100

Size  
A1  
Rev  
UR



**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



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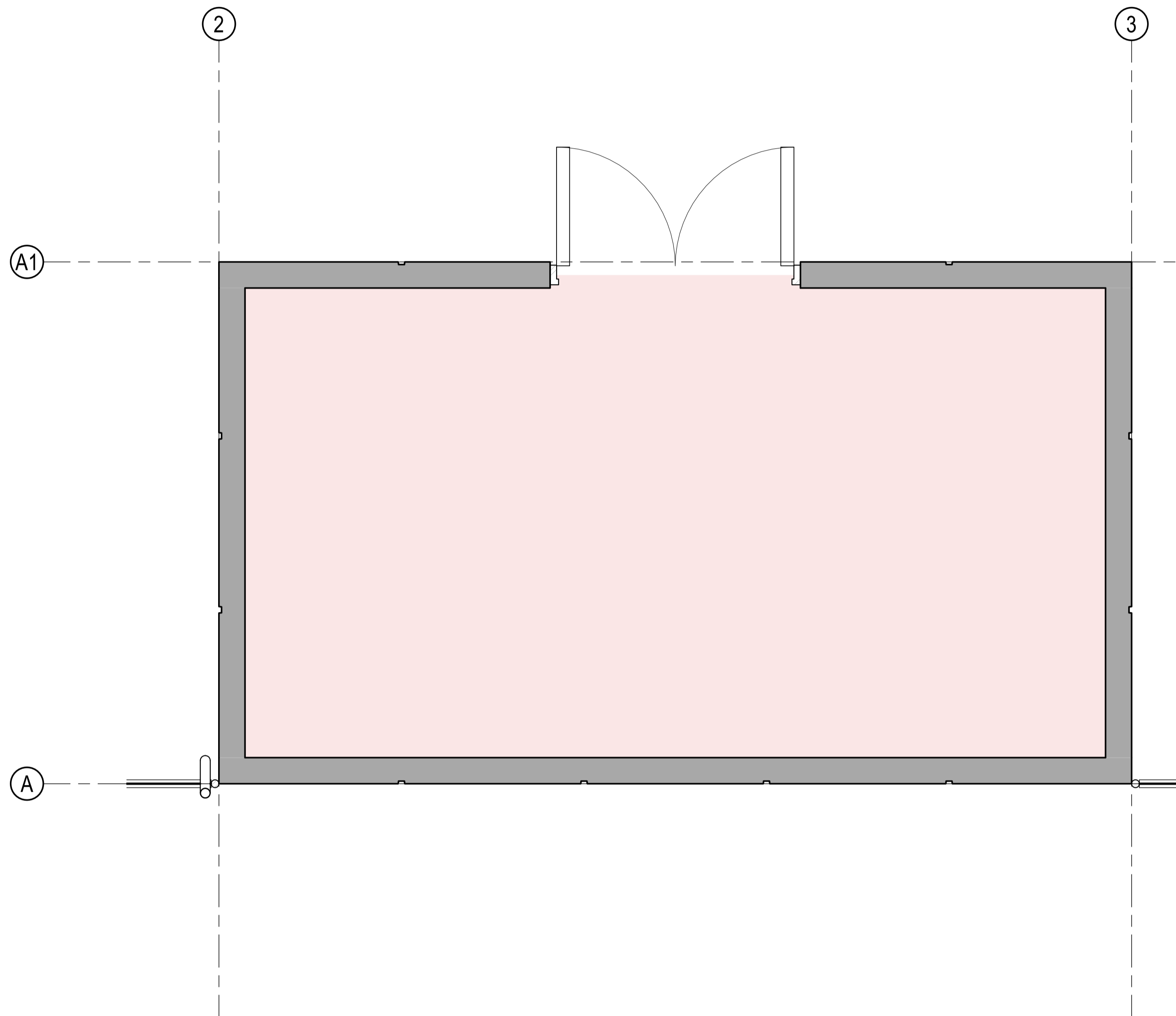
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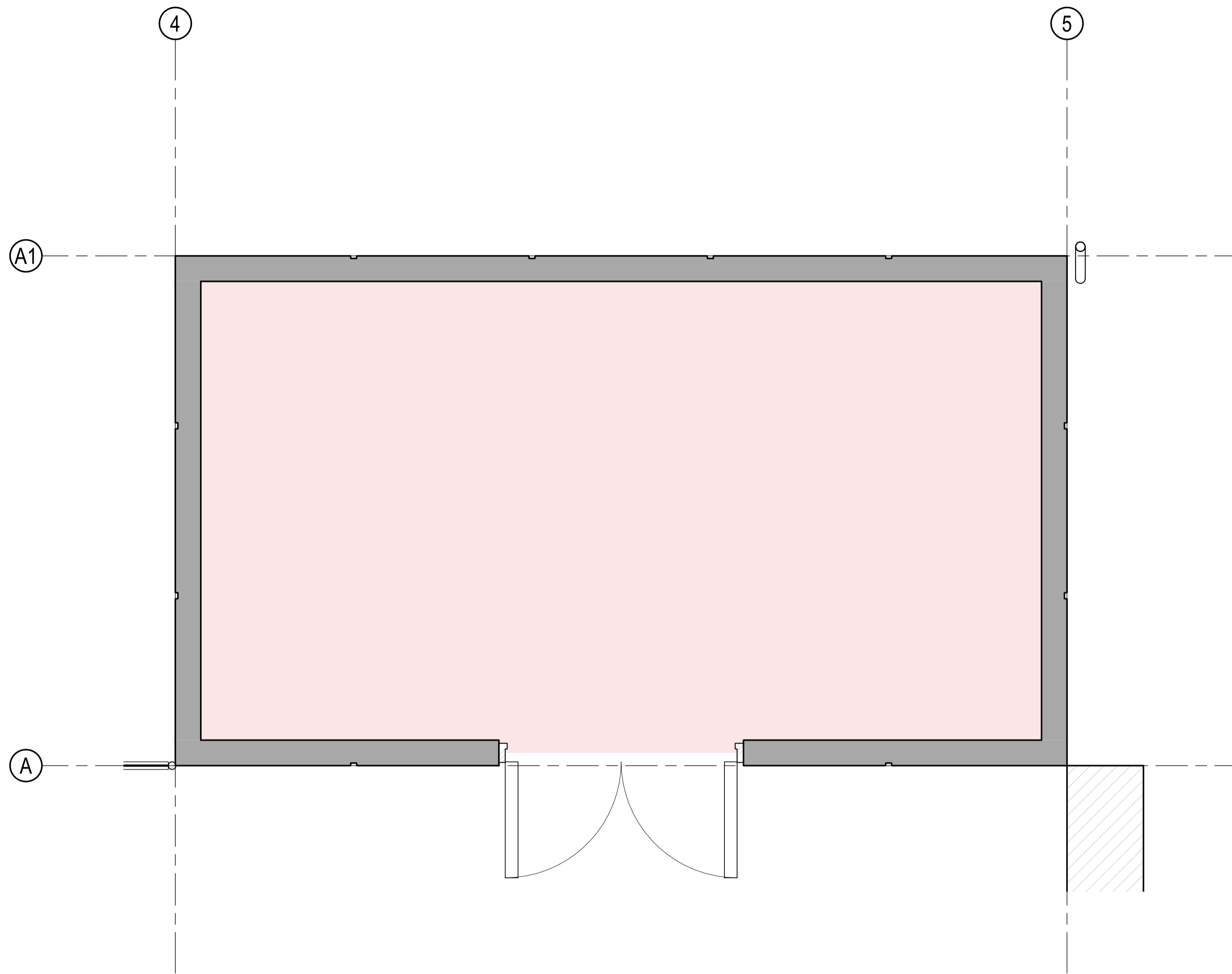


Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	CDS BUNKER
Status	

Drawing Title	GA PLANS - ROOF	Size	A1
Project No.	12593786	Rev	UR
Drawing No.	12593786-CDS-A103		

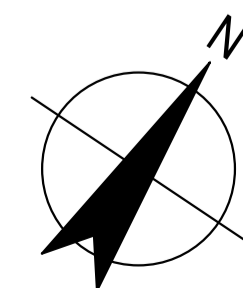


1 HAZARDOUS STORE 1 ENLARGED PLAN  
SCALE 1:25



2 HAZARDOUS STORE 2 ENLARGED PLAN  
SCALE 1:25

**UNDER REVISION**



Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
12593786

Client **ENVIROWASTE SERVICES Ltd (ESL)**

Project **CDS BUNKER**

Status

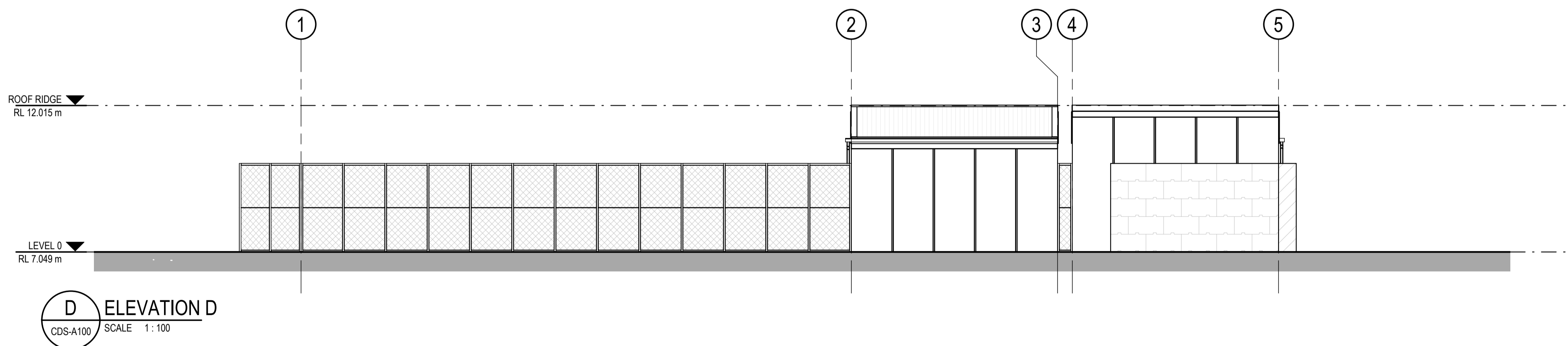
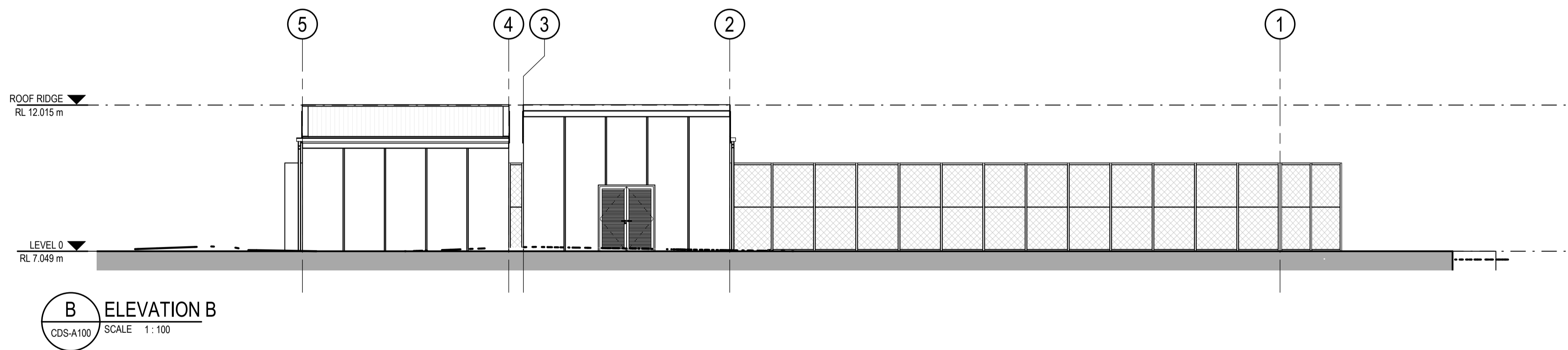
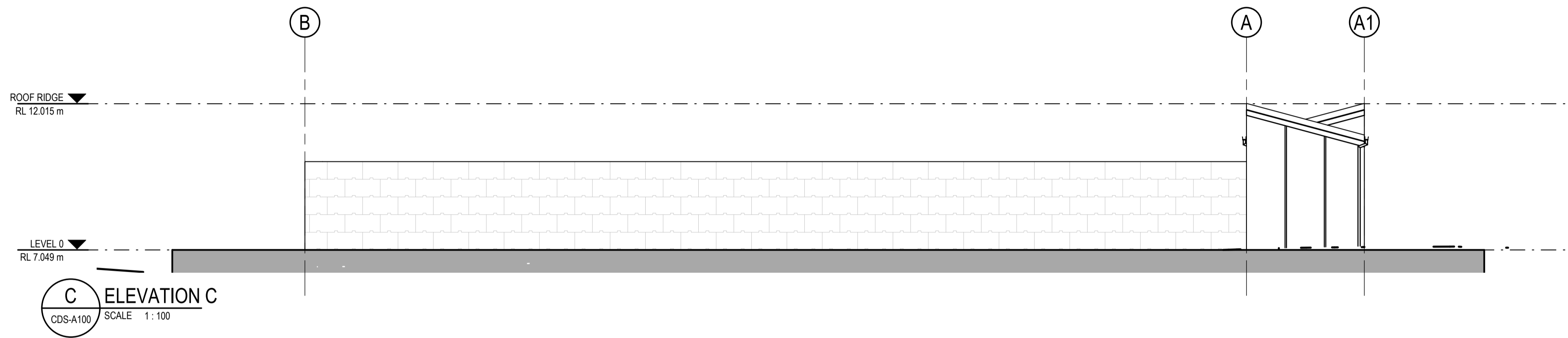
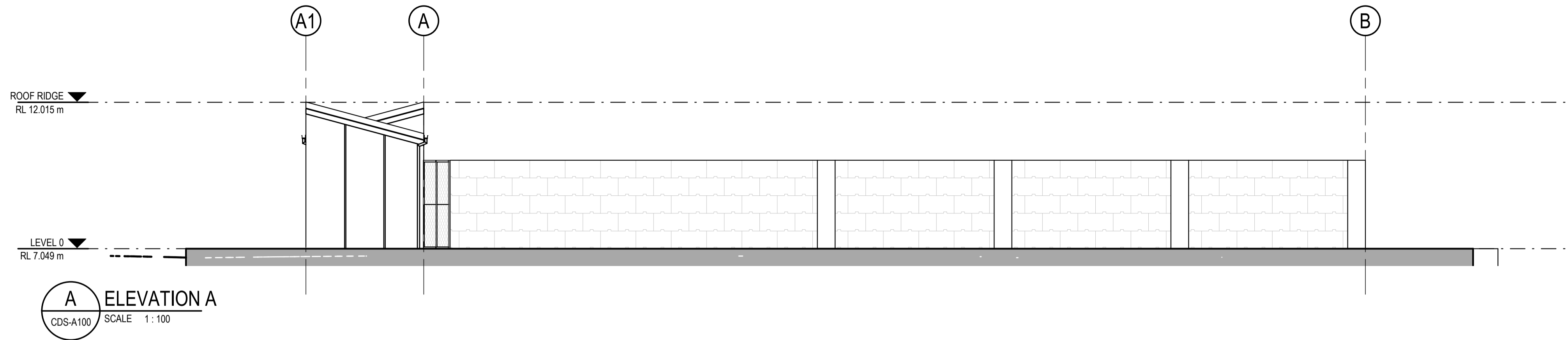
Drawing Title **ENLARGED PLANS - HAZARDOUS STORES**

Drawing No.  
12593786-CDS-A140

Size  
A1

Rev  
UR





**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
12593786

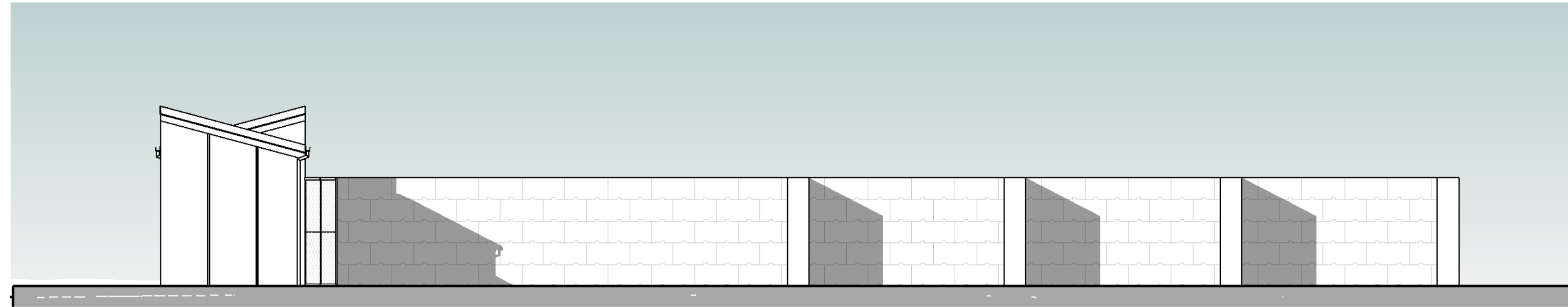
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Project	CDS BUNKER
Status	

Drawing Title  
GA ELEVATIONS

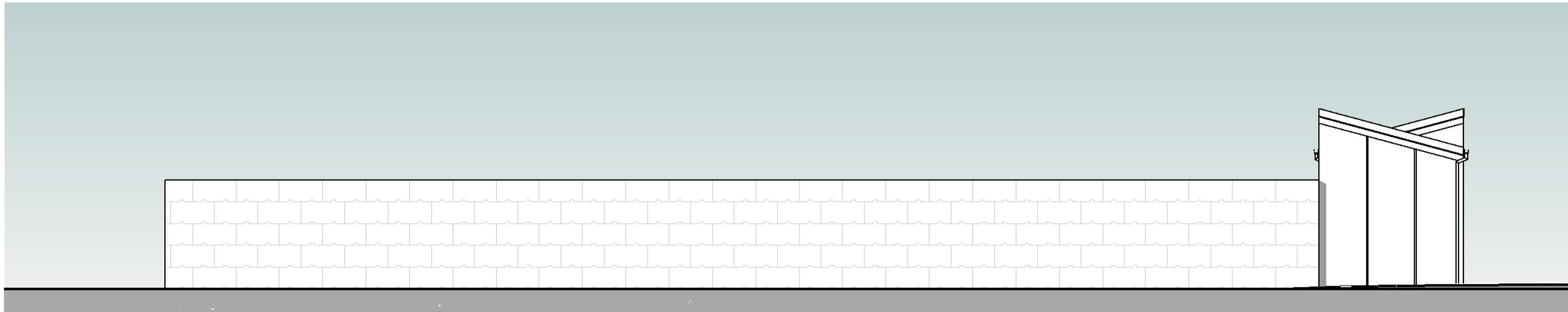
Drawing No.  
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Size  
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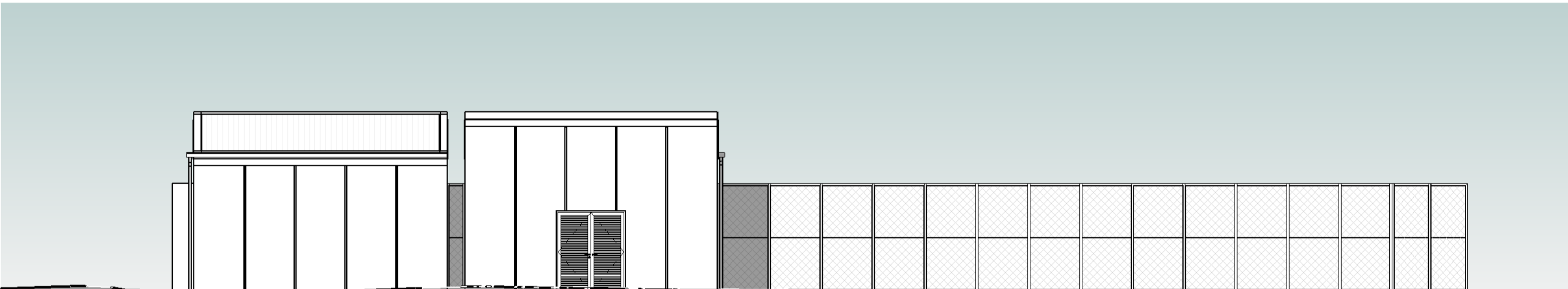
Rev  
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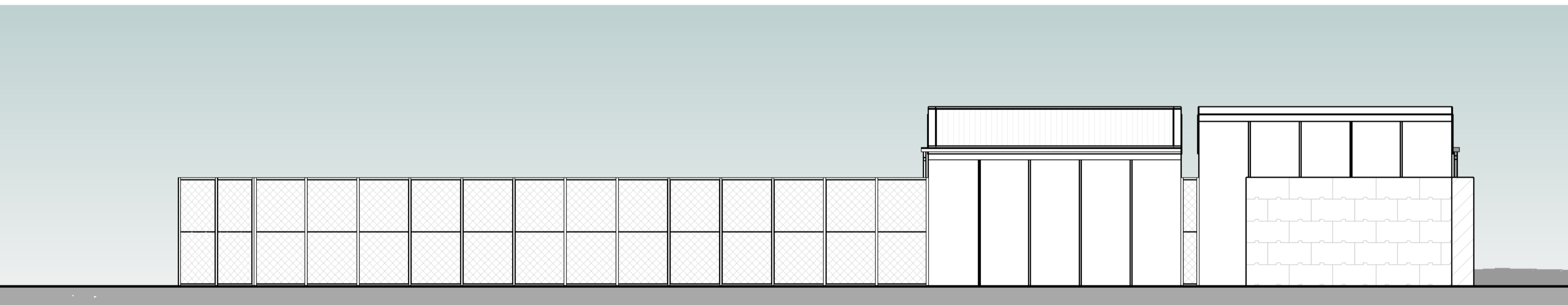
**A ELEVATION A**  
CDS-A100 SCALE 1:100



**B ELEVATION C**  
CDS-A100 SCALE 1:100



**C ELEVATION B**  
CDS-A100 SCALE 1:100



**D ELEVATION D**  
CDS-A100 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



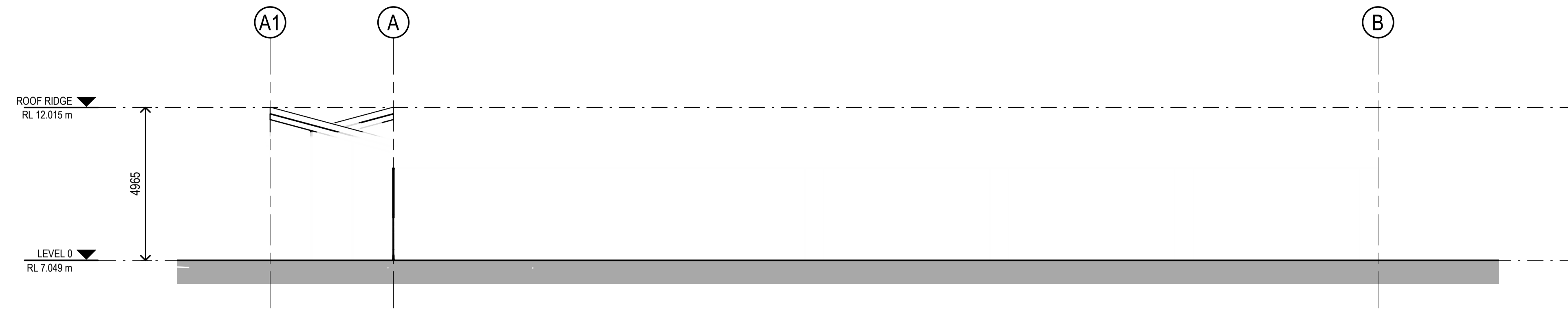
Project No.  
12593786

Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	CDS BUNKER
Status	

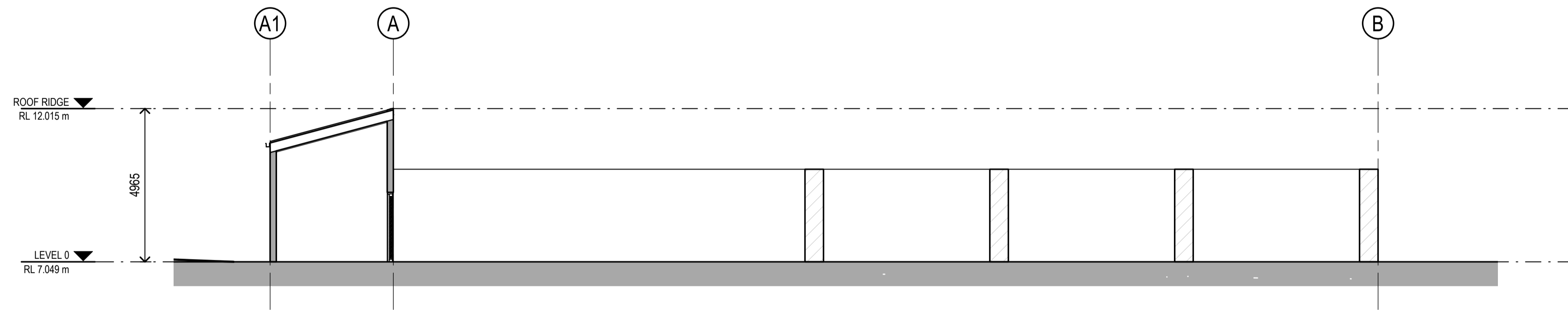
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Drawing No.  
12593786-CDS-A401

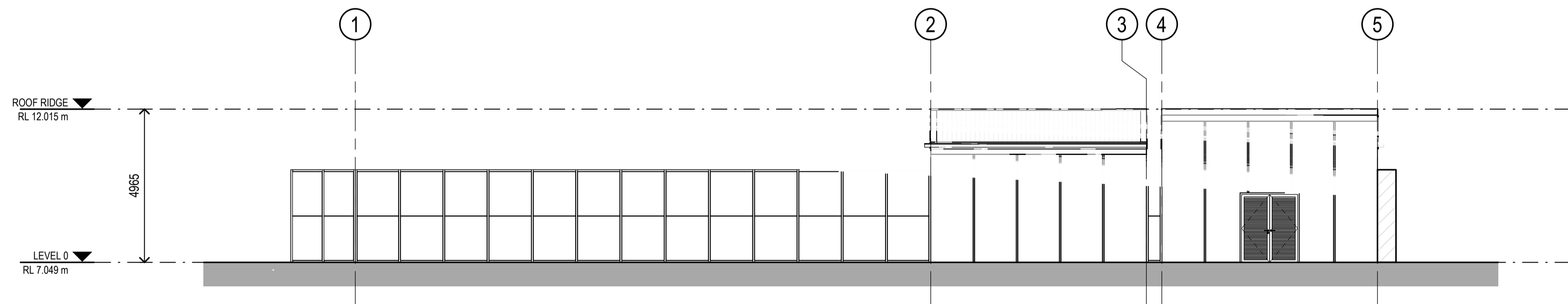
Size  
**A1**  
Rev  
**UR**



**A SECTION A**  
CDS-A100 SCALE 1:100



**B SECTION B**  
CDS-A100 SCALE 1:100



**C SECTION C**  
CDS-A100 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



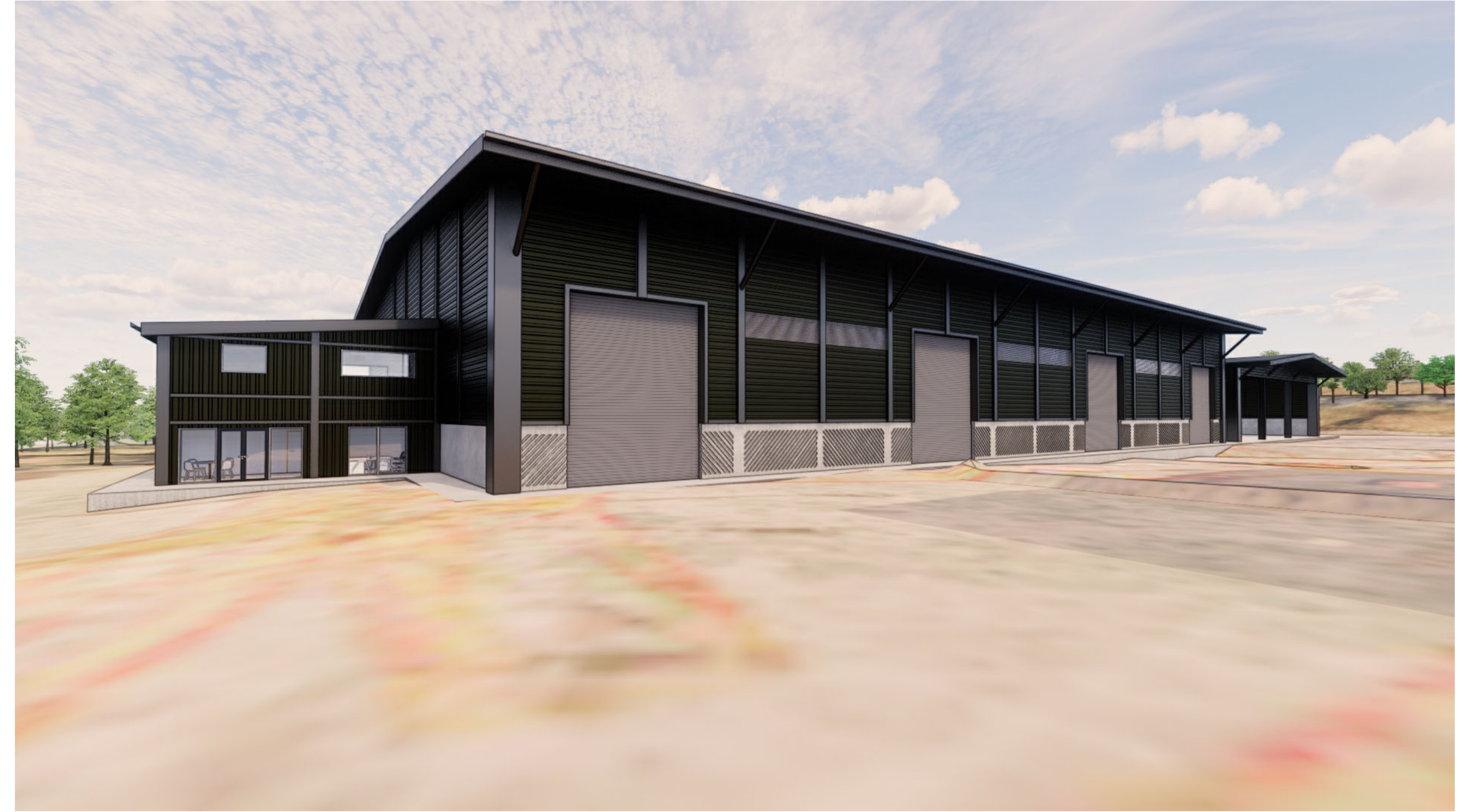
Project No.  
**12593786**

Client	<b>ENVIROWASTE SERVICES Ltd (ESL)</b>
Project	<b>CDS BUNKER</b>
Status	

Drawing Title **GA SECTIONS**

Drawing No.  
**12593786-CDS-A450**

Size **A1**  
Rev **UR**



**UNDER REVISION**

Rev	Description	Date
Author	MK	Drafting Check TR
Designer	AT	Design Check BL



Project No.  
12593786

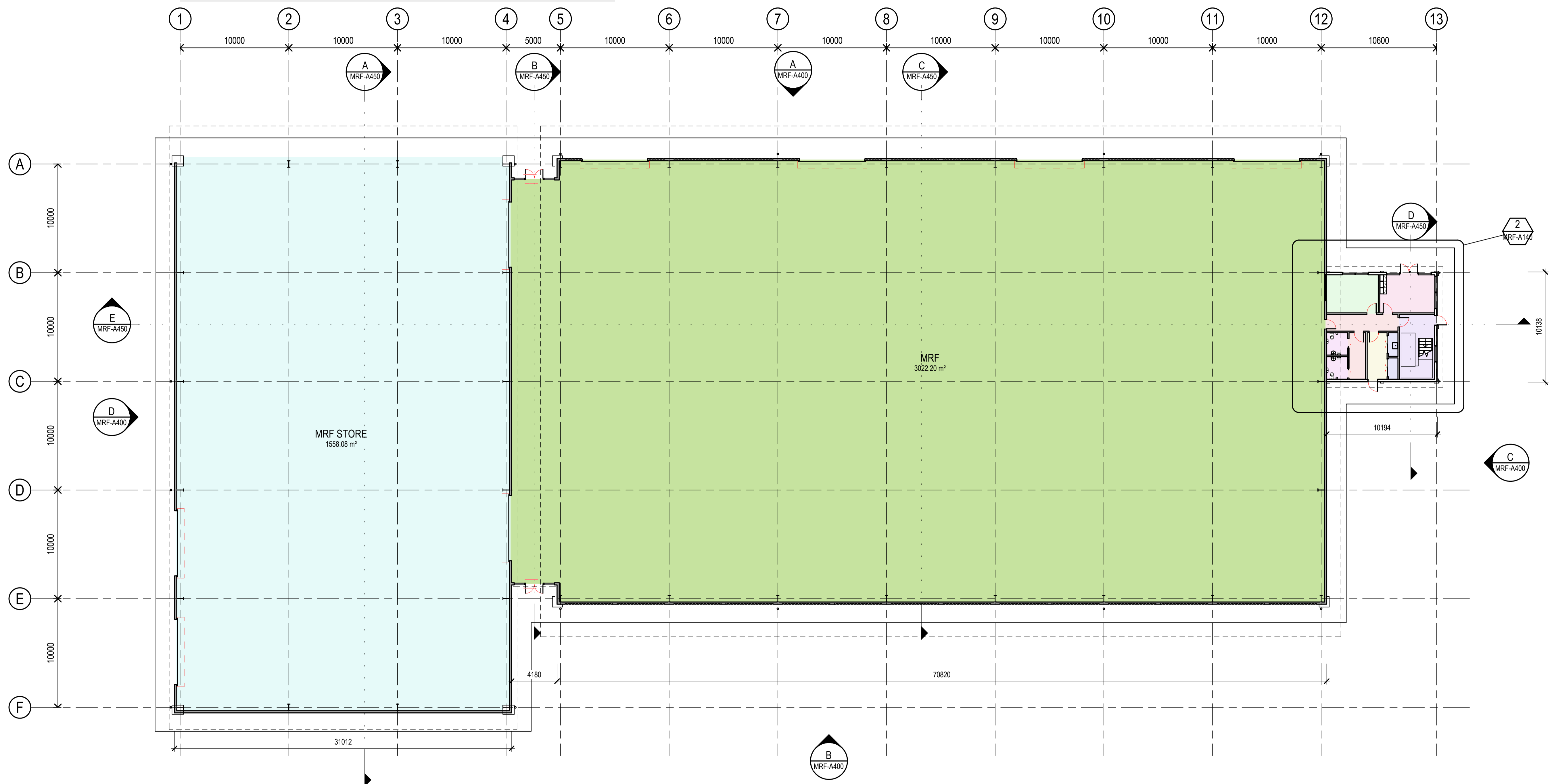
Client	ENVIRONWASTE SERVICES Ltd (ESL)
Project	DUNEDIN RRP MRF
Status	FOR REVIEW

Drawing Title	RENTERS
Status Code	01

Drawing No.  
12593786-MRF-A002

Size  
A1

Rev  
UR



1 GROUND FLOOR BELOW 2400MM  
SCALE 1:200

**UNDER REVISION**

Rev	Description	Date
Author	MK	Drafting Check TR
Designer	AT	Design Check BL



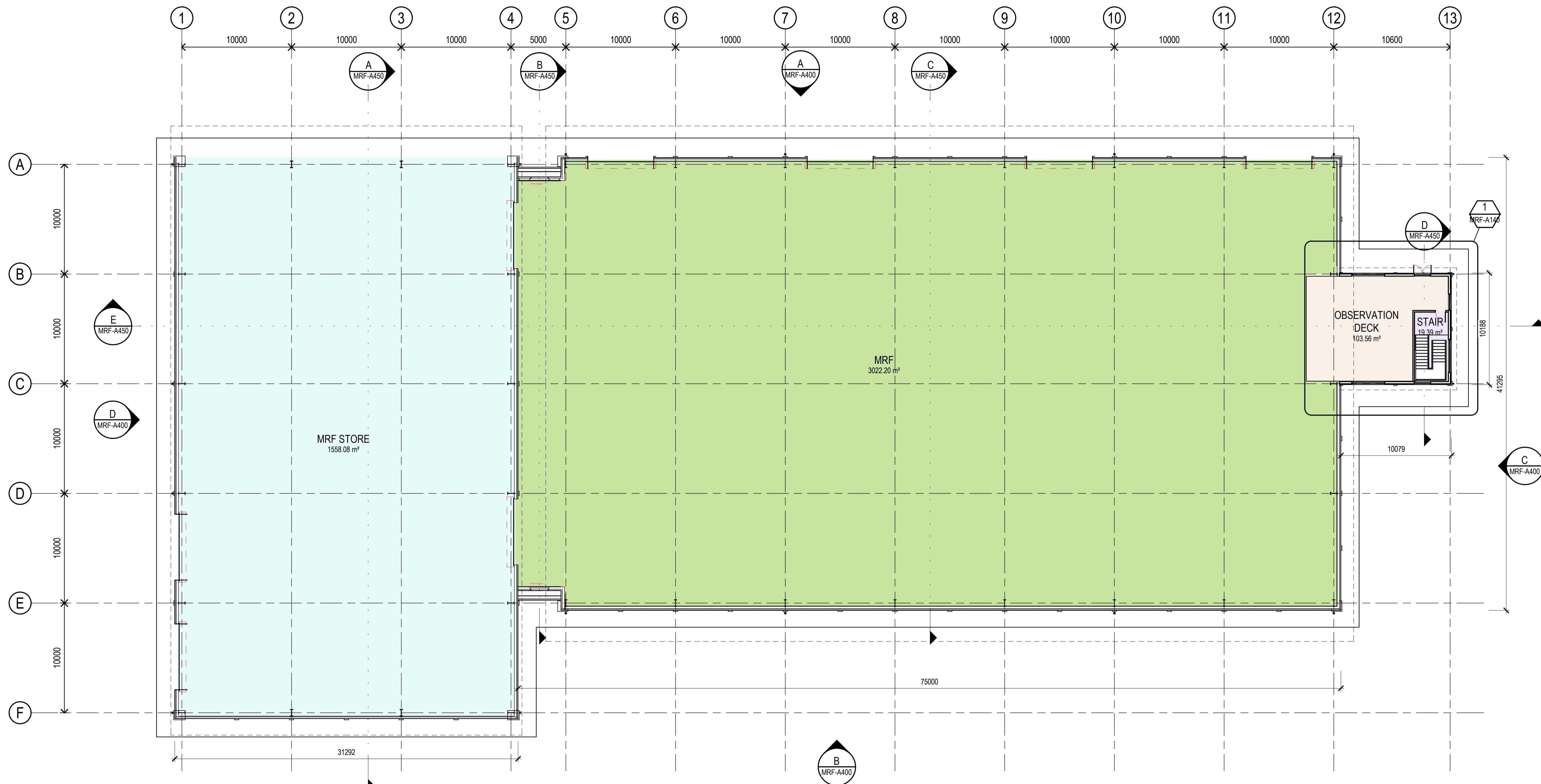
Client **ENVIRONWASTE SERVICES Ltd (ESL)**  
 Project **DUNEDIN RRP MRF**  
 Status **FOR REVIEW**

Drawing Title **GA PLANS - BELOW 2400MM**

Status Code **01**

Drawing No. **12593786-MRF-A100**

Size **A1**  
Rev **UR**



2 GROUND FLOOR ABOVE 2400MM  
SCALE 1:200

**UNDER REVISION**

Rev	Description	Date
Author	MK	Drafting Check
Designer	AT	Design Check
		TR
		BL



Project No.  
12593786

Client **ENVIRONWASTE SERVICES Ltd (ESL)**  
Project **DUNEDIN RRP MRF**  
Status **FOR REVIEW**

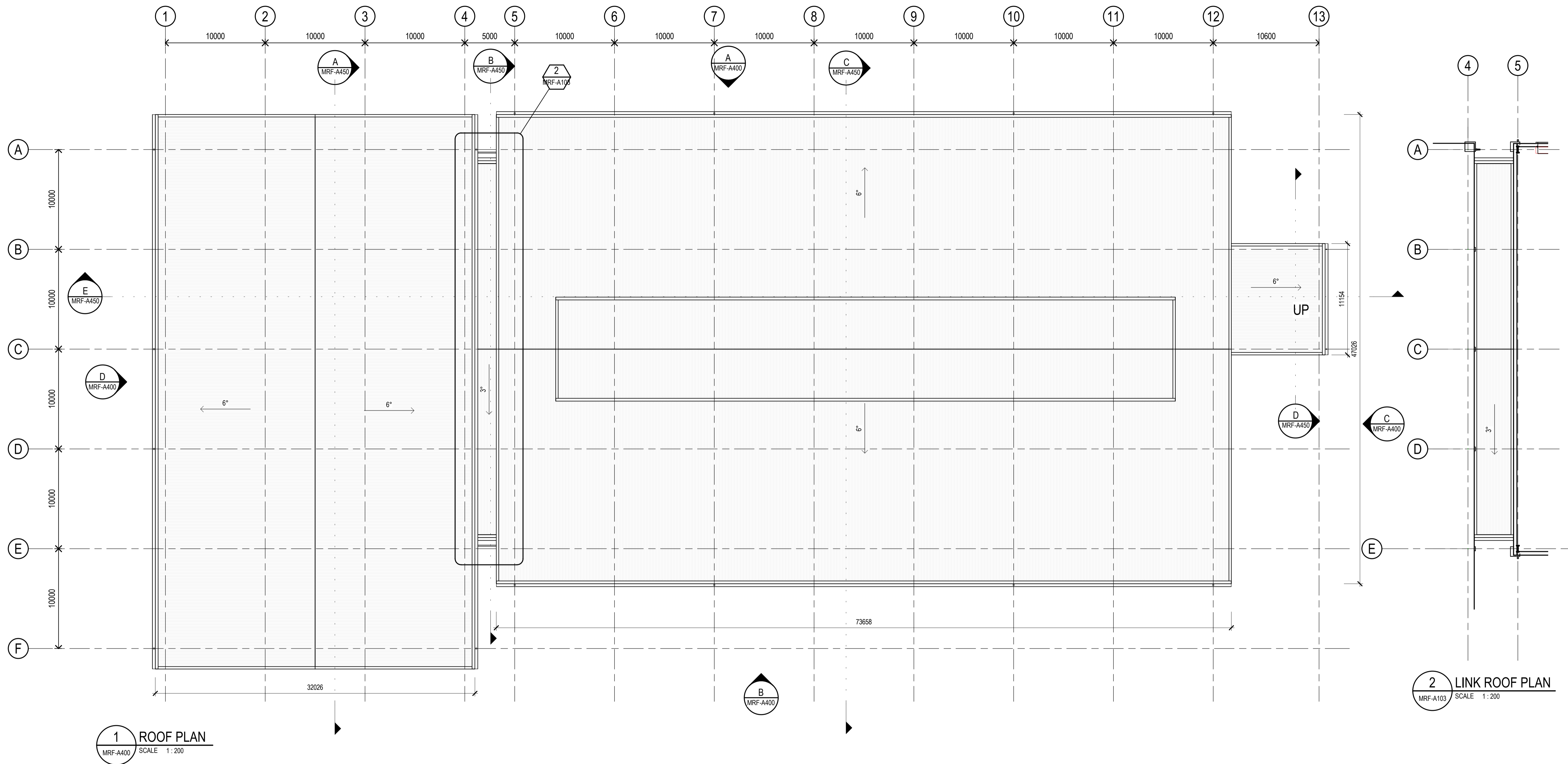
Drawing Title **GA PLANS - ABOVE 2400MM**

Status Code **01**

Drawing No.  
12593786-MRF-A101

Size  
A1

Rev  
UR



**UNDER REVISION**

Rev	Description	Date
1	Revision 1	Date 1

Author MK      Drafting Check TR  
 Designer AT      Design Check BL



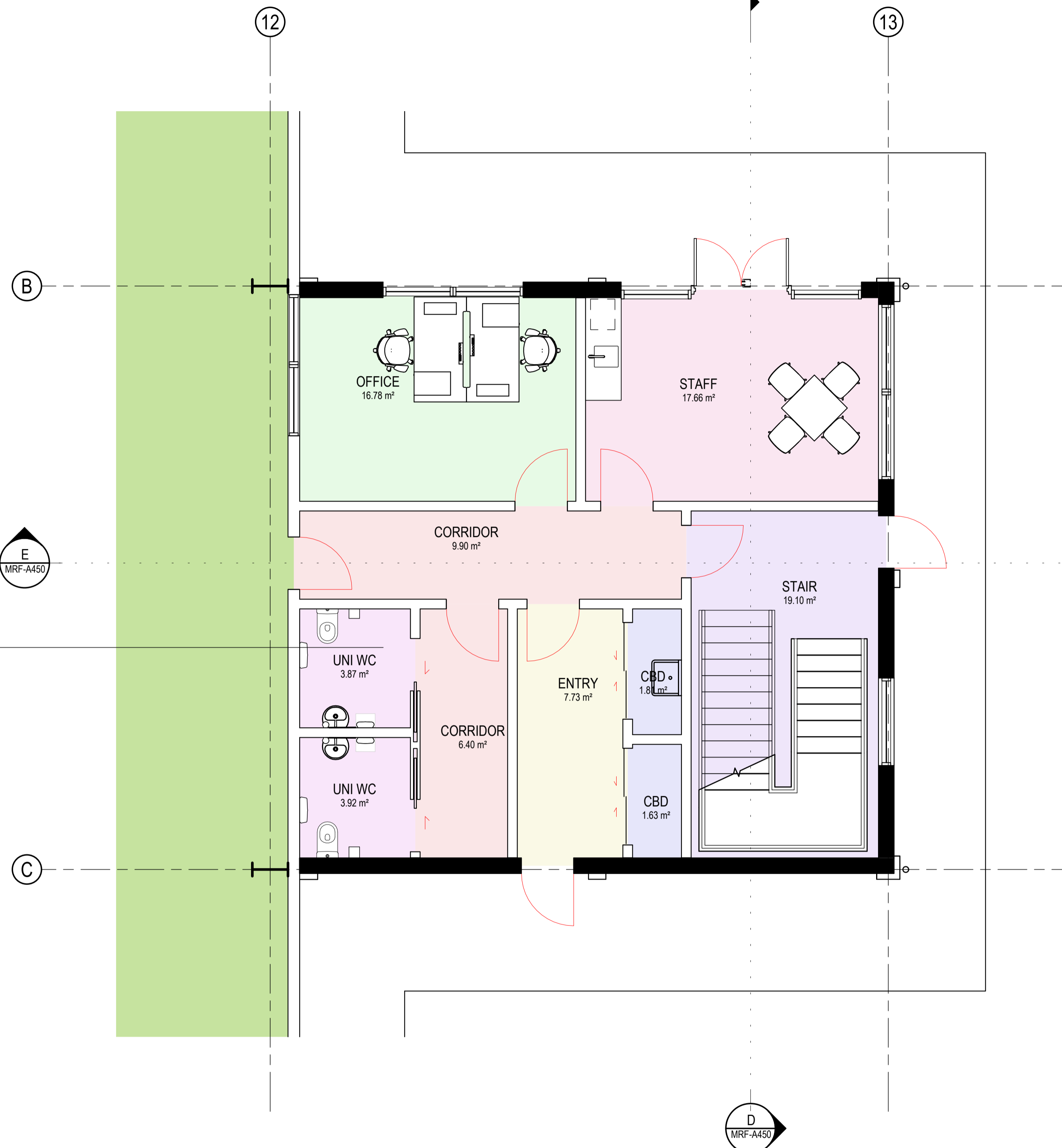
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12593786

Client **ENVIRONWASTE SERVICES Ltd (ESL)**  
 Project **DUNEDIN RRP MRF**  
 Status **FOR REVIEW**

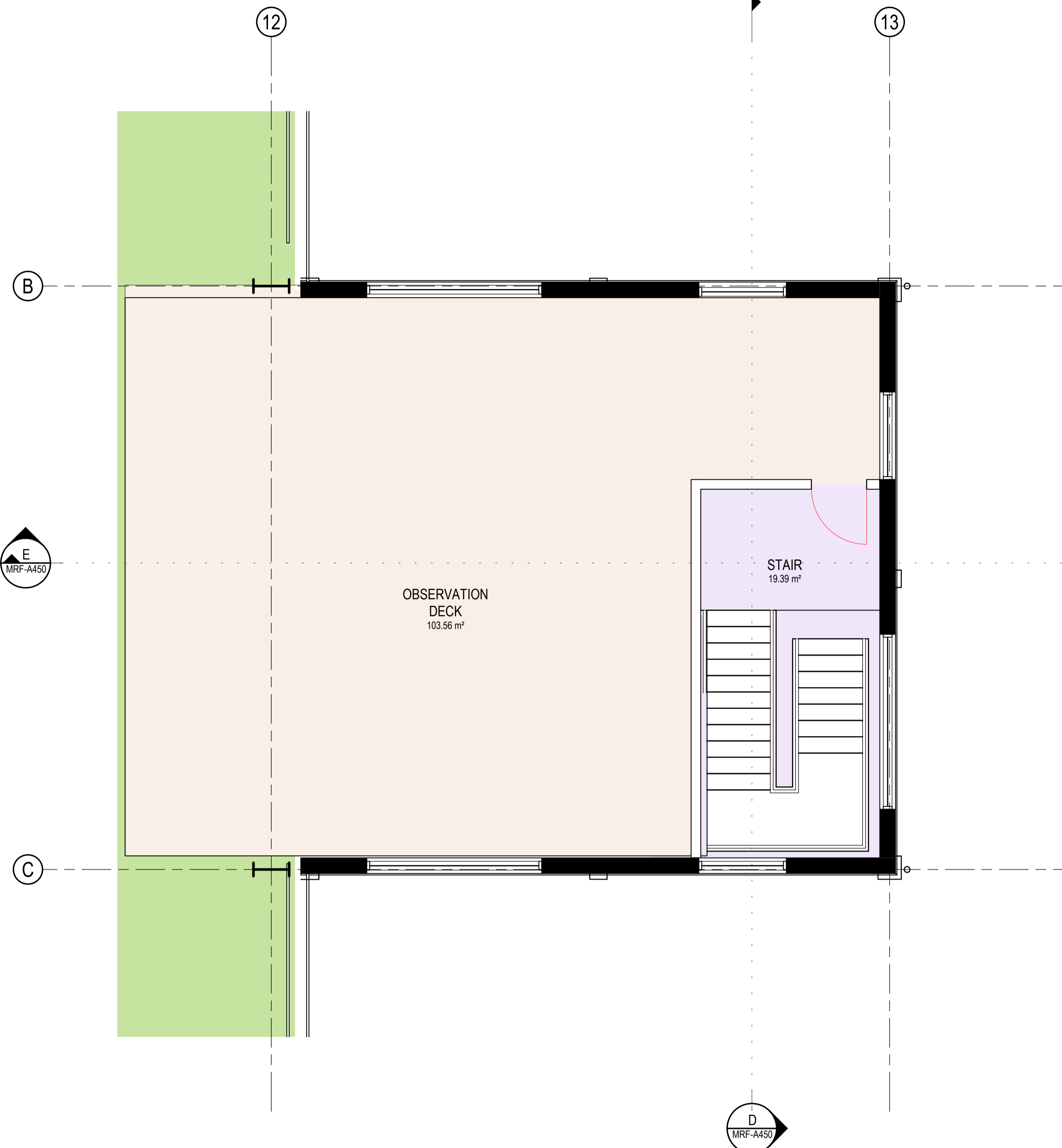
Drawing Title **GA PLANS - ROOF**  
 Status Code **01**

Drawing No. **12593786-MRF-A103**  
 Rev **UA**

Size **A1**



**2 OFFICE - ENLARGED PLAN**  
MRF-A100 SCALE 1:50



**1 OBSERVATION DECK - ENLARGED PLAN**  
MRF-A101 SCALE 1:50

**UNDER REVISION**

Rev	Description	Date

Author Author Drafting Check  
Designer Designer Design Check Checker

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Project No.  
**12593786**

Client **ENVIRONWASTE SERVICES Ltd (ESL)**  
Project **DUNEDIN RRP MRF**  
Status

Drawing Title **ENLARGED OFFICE PLANS**

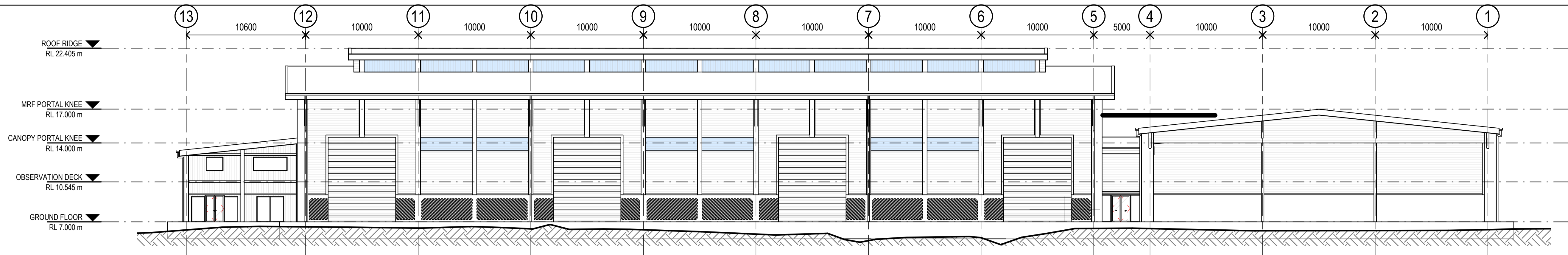
Status Code

Drawing No.  
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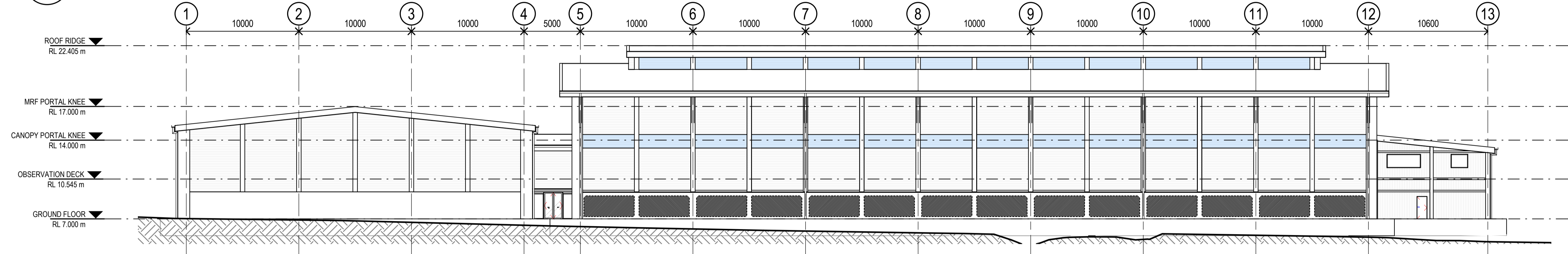
Size  
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Rev  
**UR**

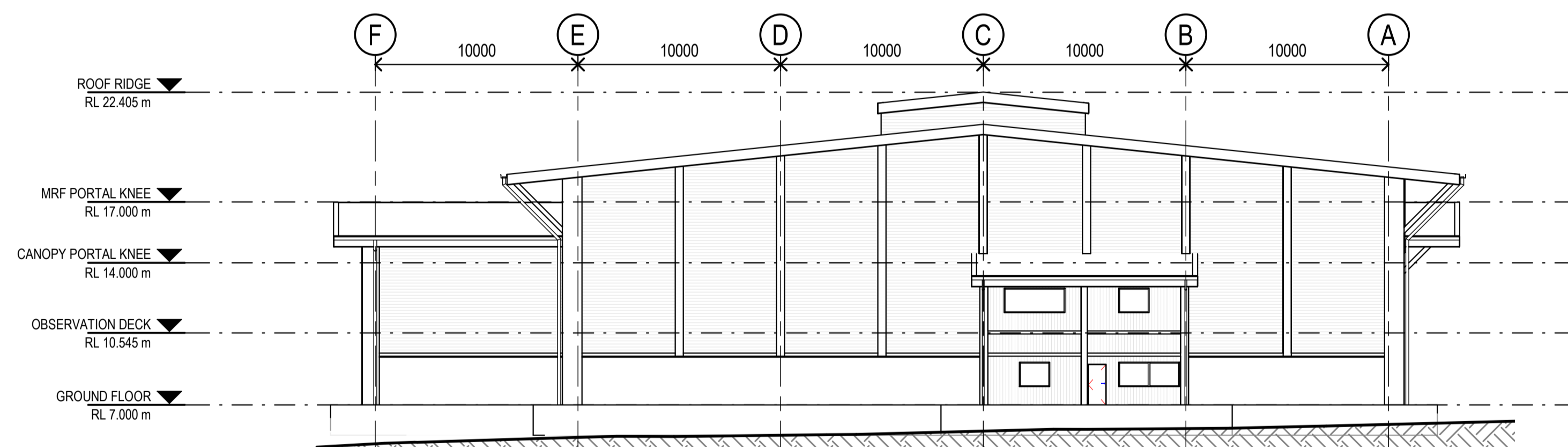




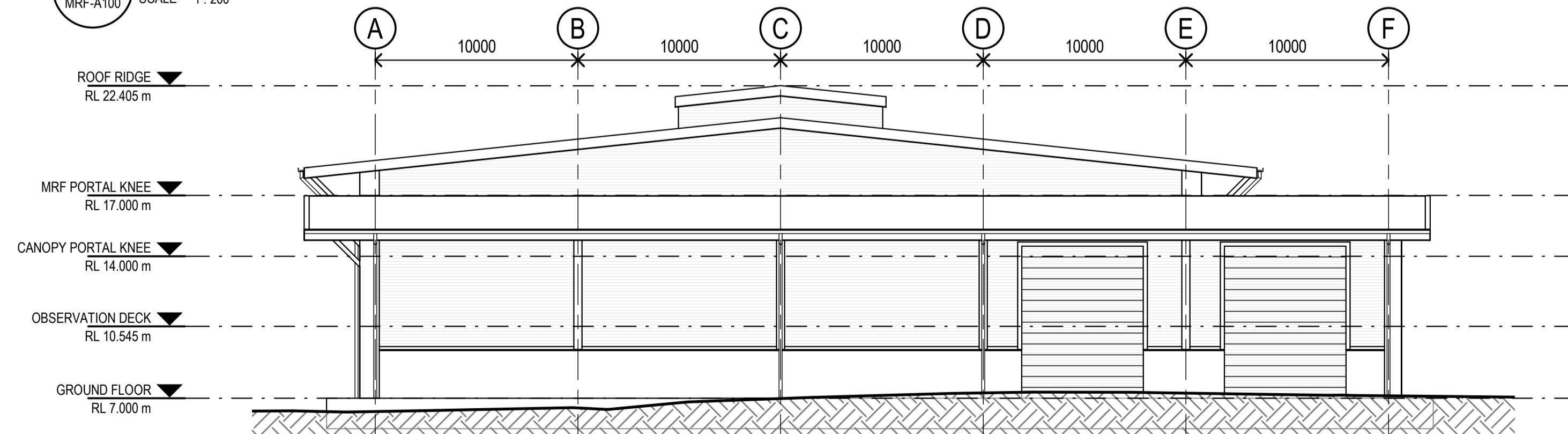
**A NORTH ELEVATION**  
MRF-A100 SCALE 1:200



**B SOUTH ELEVATION**  
MRF-A100 SCALE 1:200



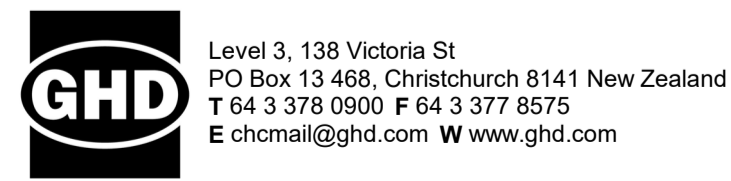
**C EAST ELEVATION**  
MRF-A100 SCALE 1:200



**D WEST ELEVATION**  
MRF-A100 SCALE 1:200

**UNDER REVISION**

Rev	Description	Date
Author	MK	Drafting Check TR
Designer	AT	Design Check BL



Client **ENVIRONWASTE SERVICES Ltd (ESL)**

Project **DUNEDIN RRP MRF**

Status **FOR REVIEW**

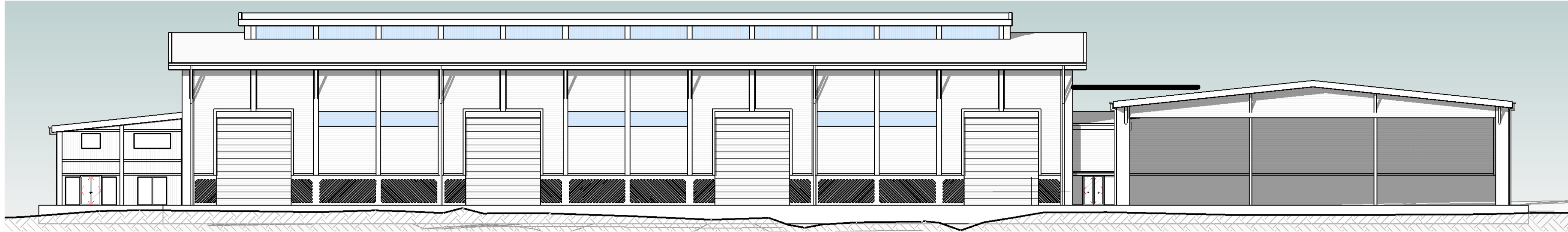
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Status Code **01**

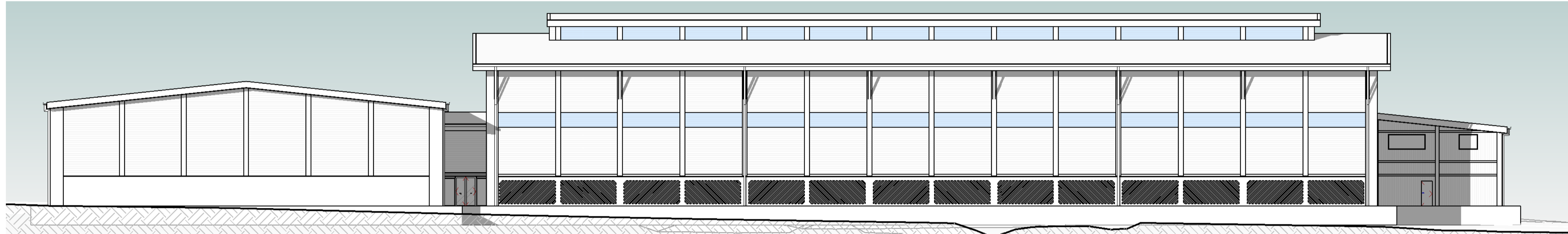
Drawing No. **12593786-MRF-A400**

Size **A1**

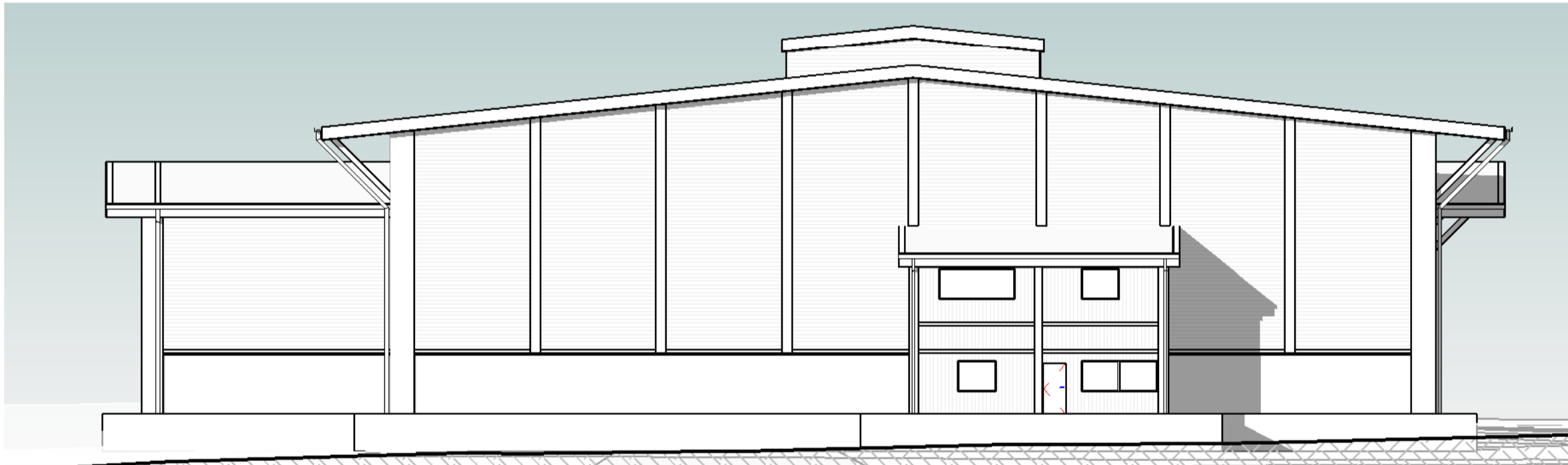
Rev **UR**



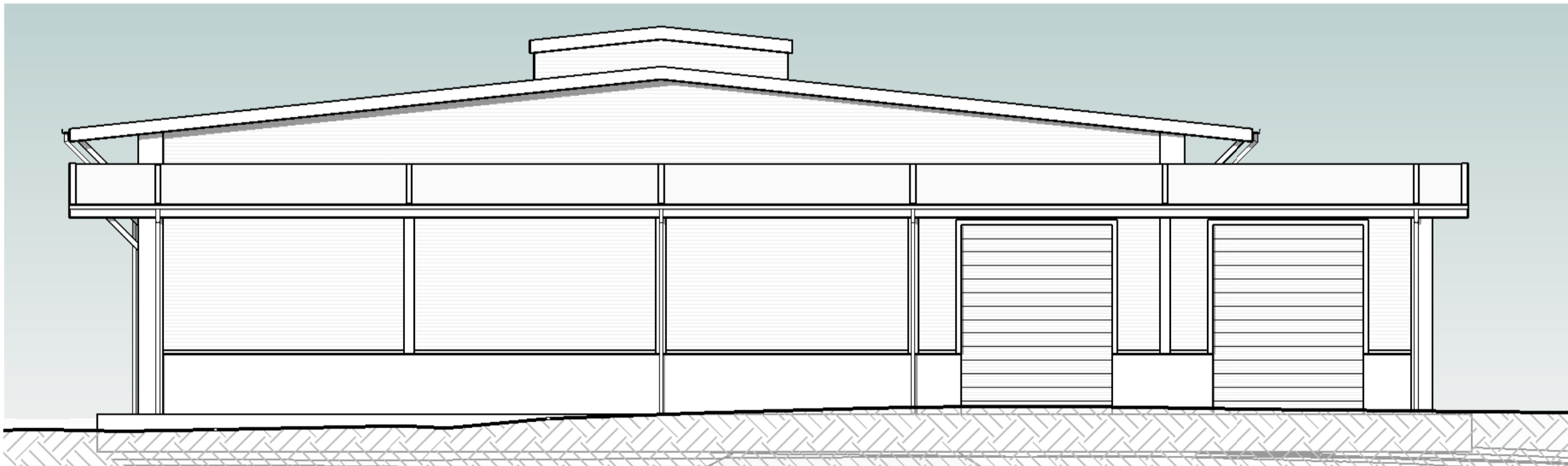
**A NORTH ELEVATION**  
SCALE 1:200



**B SOUTH ELEVATION**  
SCALE 1:200



**C EAST ELEVATION**  
MRF-A140 SCALE 1:200



**D WEST ELEVATION**  
SCALE 1:200

Rev	Description	Date

Author	Author	Drafting Check
Designer	Designer	Design Check
		Checker


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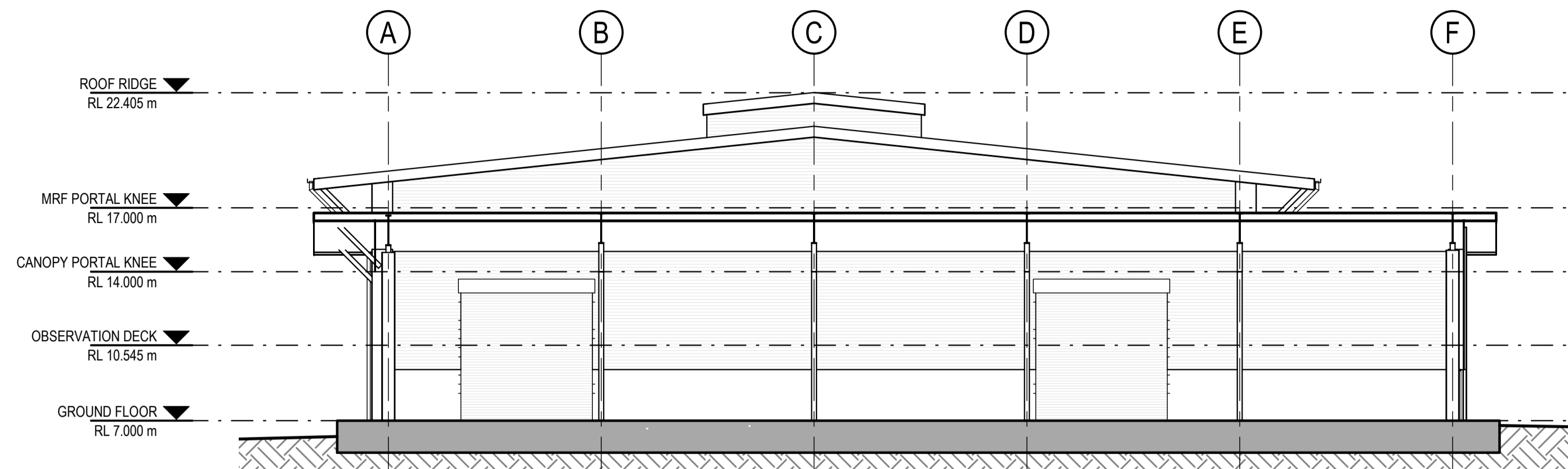
Project No.  
**12593786**

Client	<b>ENVIRONWASTE SERVICES Ltd (ESL)</b>
Project	<b>DUNEDIN RRP MRF</b>
Status	

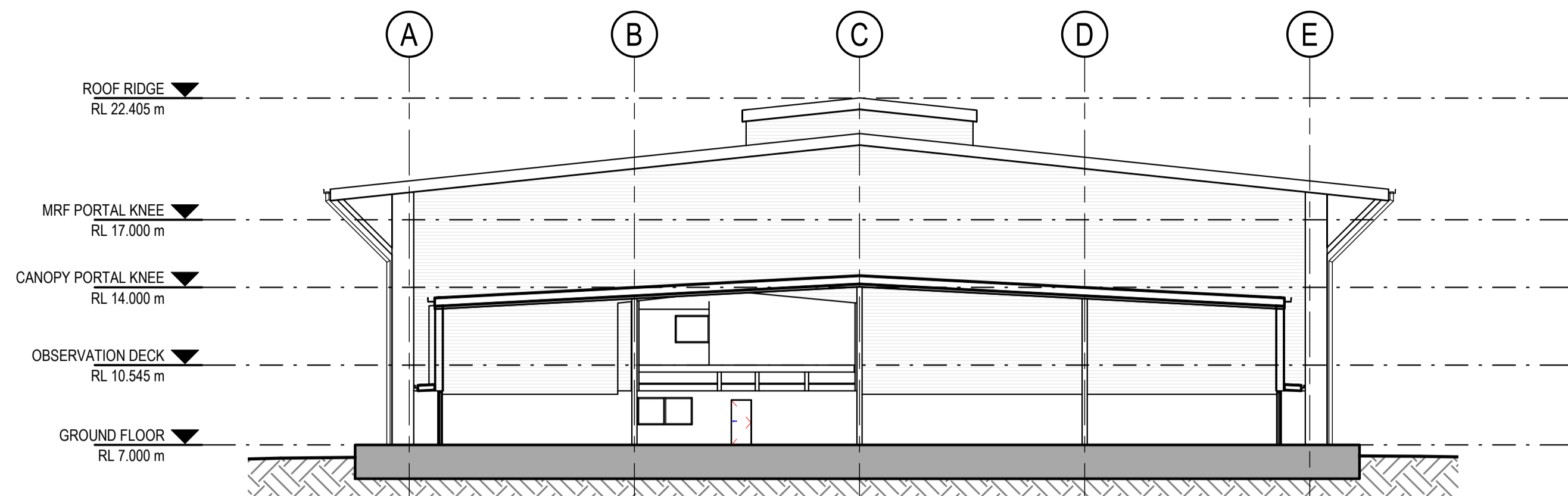
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Status Code	
Drawing No.	<b>12593786-MRF-A401</b>

Size  
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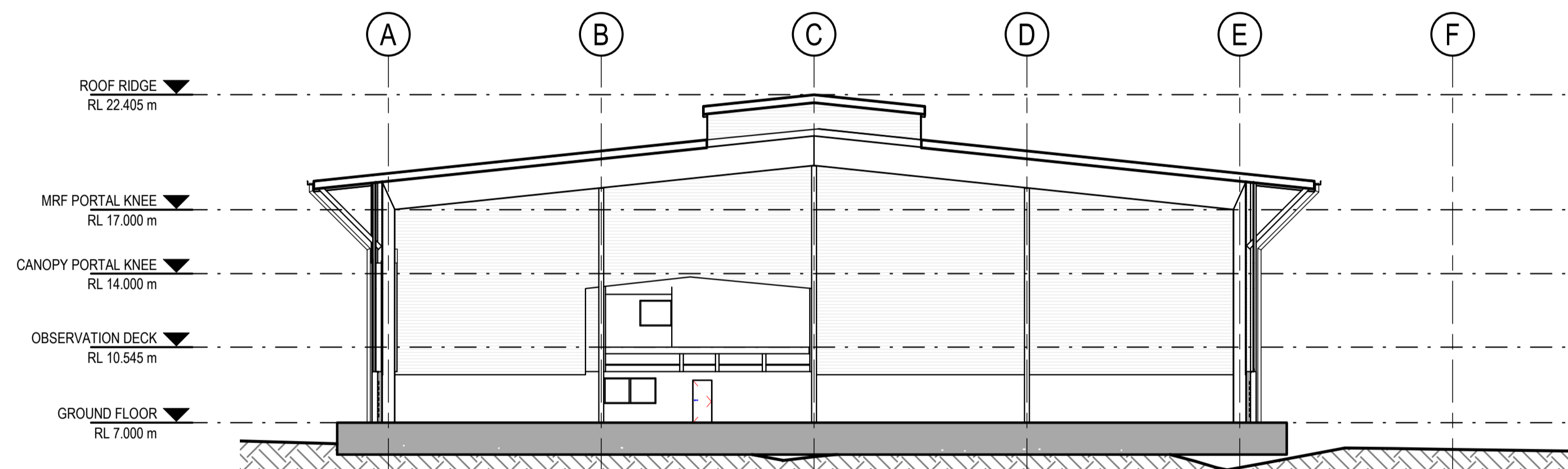
Rev



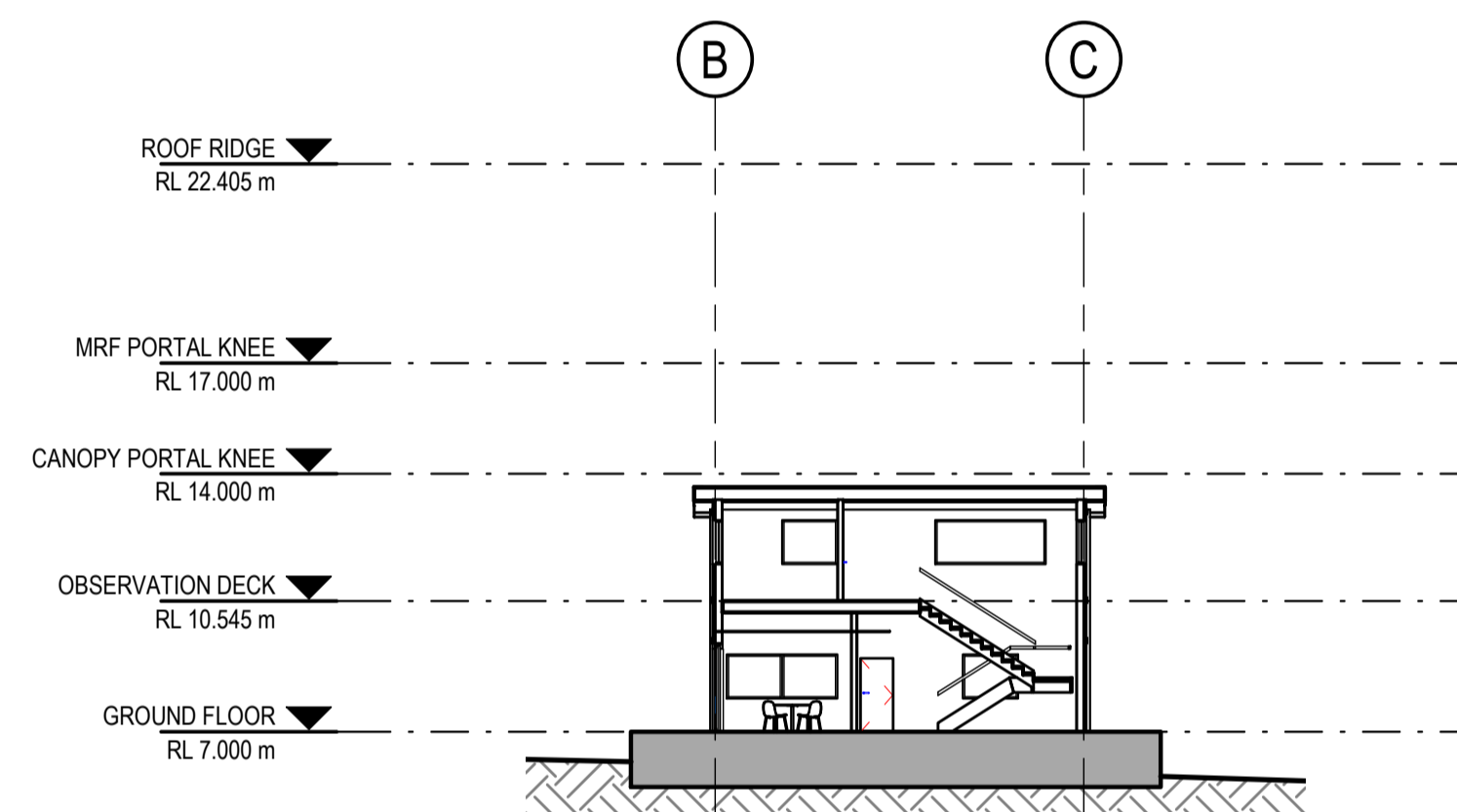
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MRF-A100 SCALE 1:200



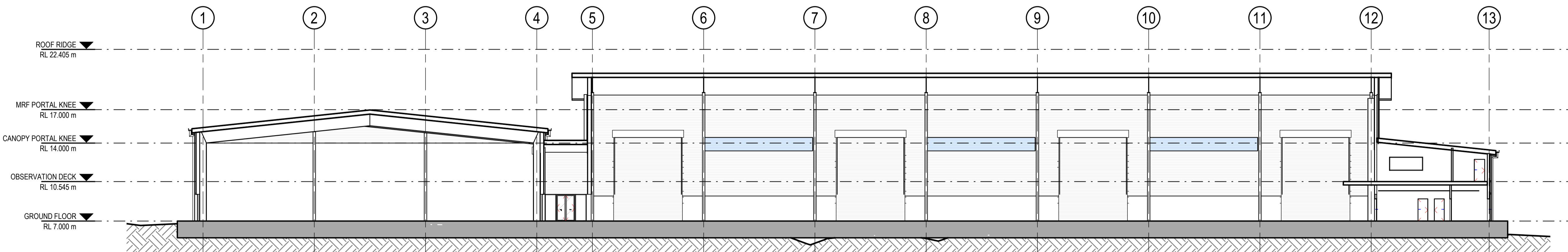
**B SECTION B**  
MRF-A100 SCALE 1:200



**C SECTION C**  
MRF-A100 SCALE 1:200



**D SECTION D**  
MRF-A100 SCALE 1:200



**E SECTION E**  
MRF-A100 SCALE 1:200

**UNDER REVISION**

Rev	Description	Date
Author	MK	
Designer	AT	
Drafting Check	TR	
Design Check	BL	



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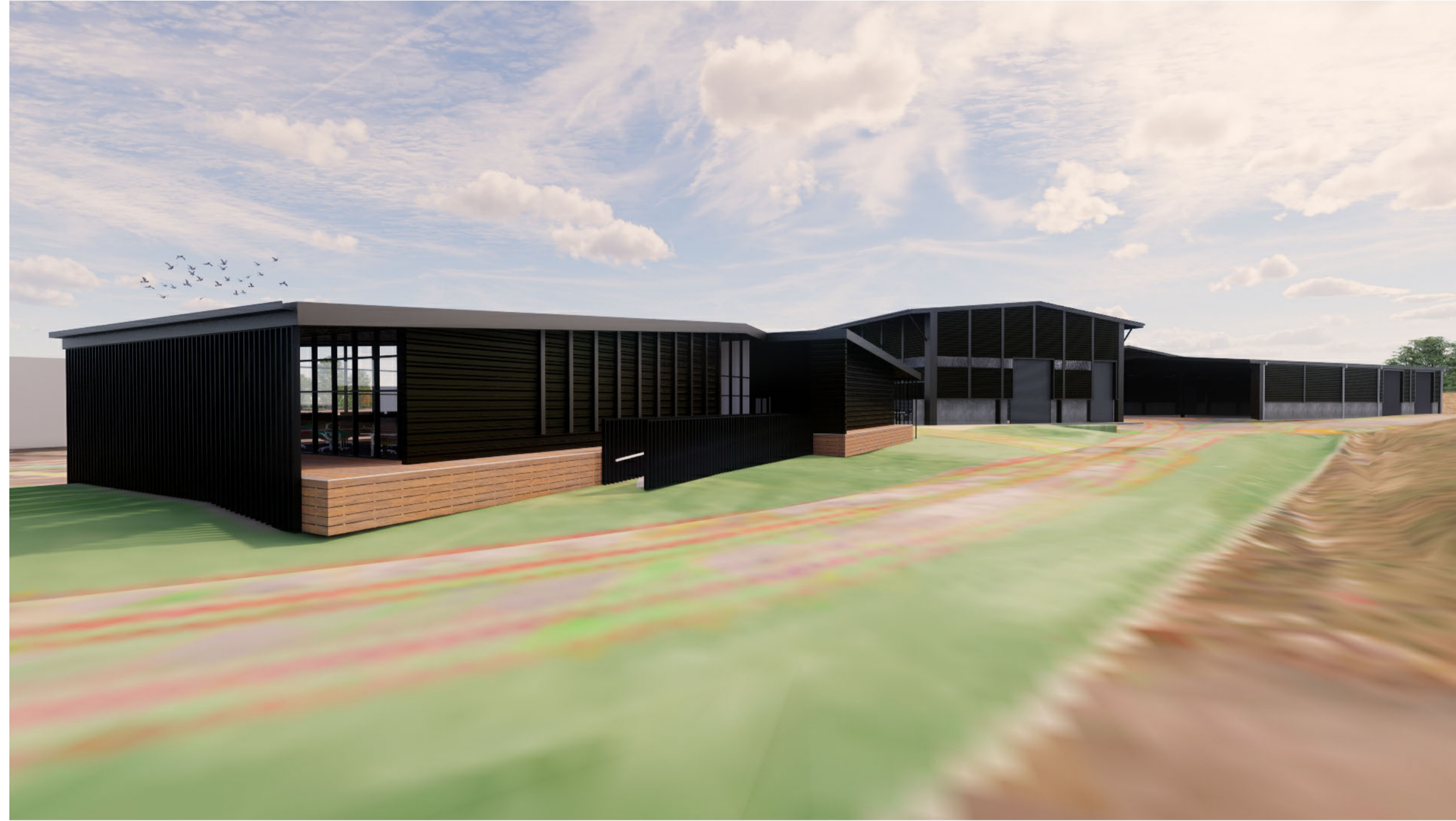


Client **ENVIRONWASTE SERVICES Ltd (ESL)**  
Project **DUNEDIN RRP MRF**  
Status **FOR REVIEW**

Drawing Title **GA SECTIONS**  
Status Code **01**

Drawing No. **12593786-MRF-A450**

Size **A1**  
Rev **UR**



**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
**12593786**

Client **ENVIROWASTE SERVICES Ltd (ESL)**

Project **OFFICE BUILDING**

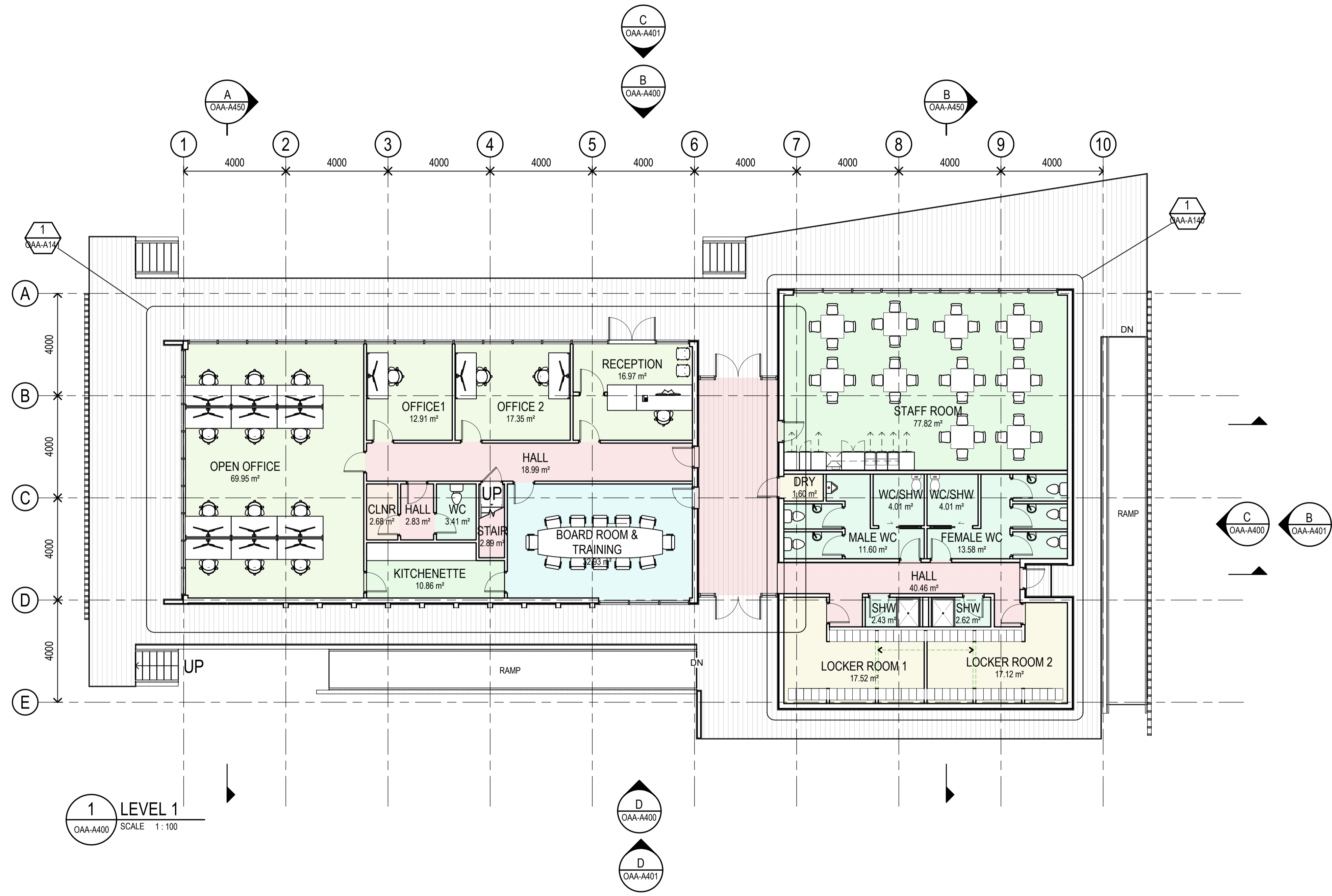
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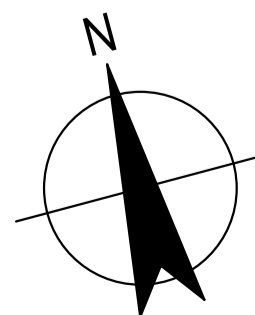
Drawing No.  
**12593786-OAA-A002**

Size  
**A1**

Rev  
**UR**



**UNDER REVISION**



Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



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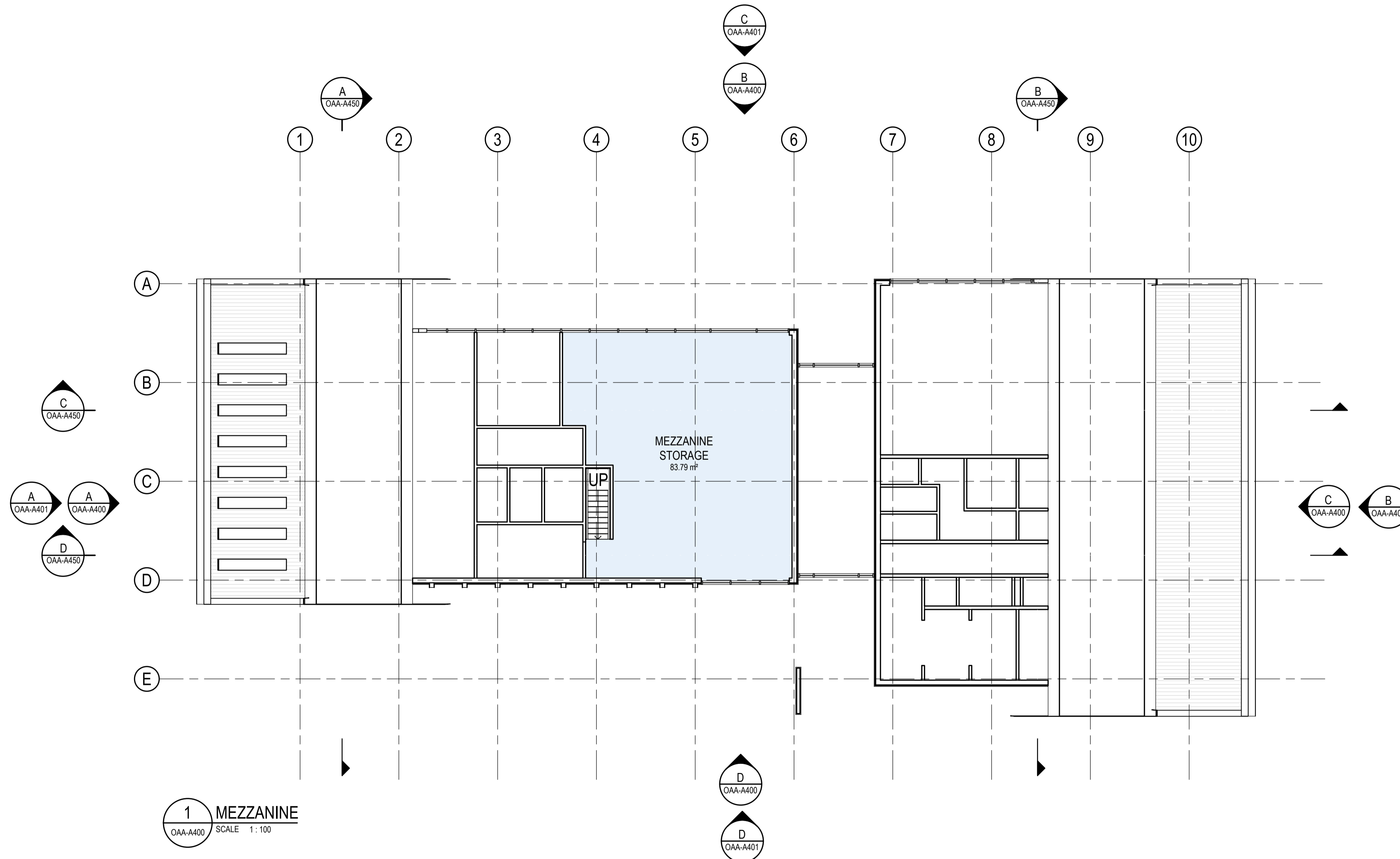
Client **ENVIROWASTE SERVICES Ltd (ESL)**  
Project **OFFICE BUILDING**  
Status

Drawing Title **GA PLAN**  
Drawing No. **12593786-OAA-A100**  
Rev **UR**

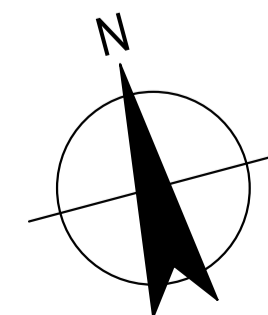
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Project No. **12593786**



Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
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Project No.  
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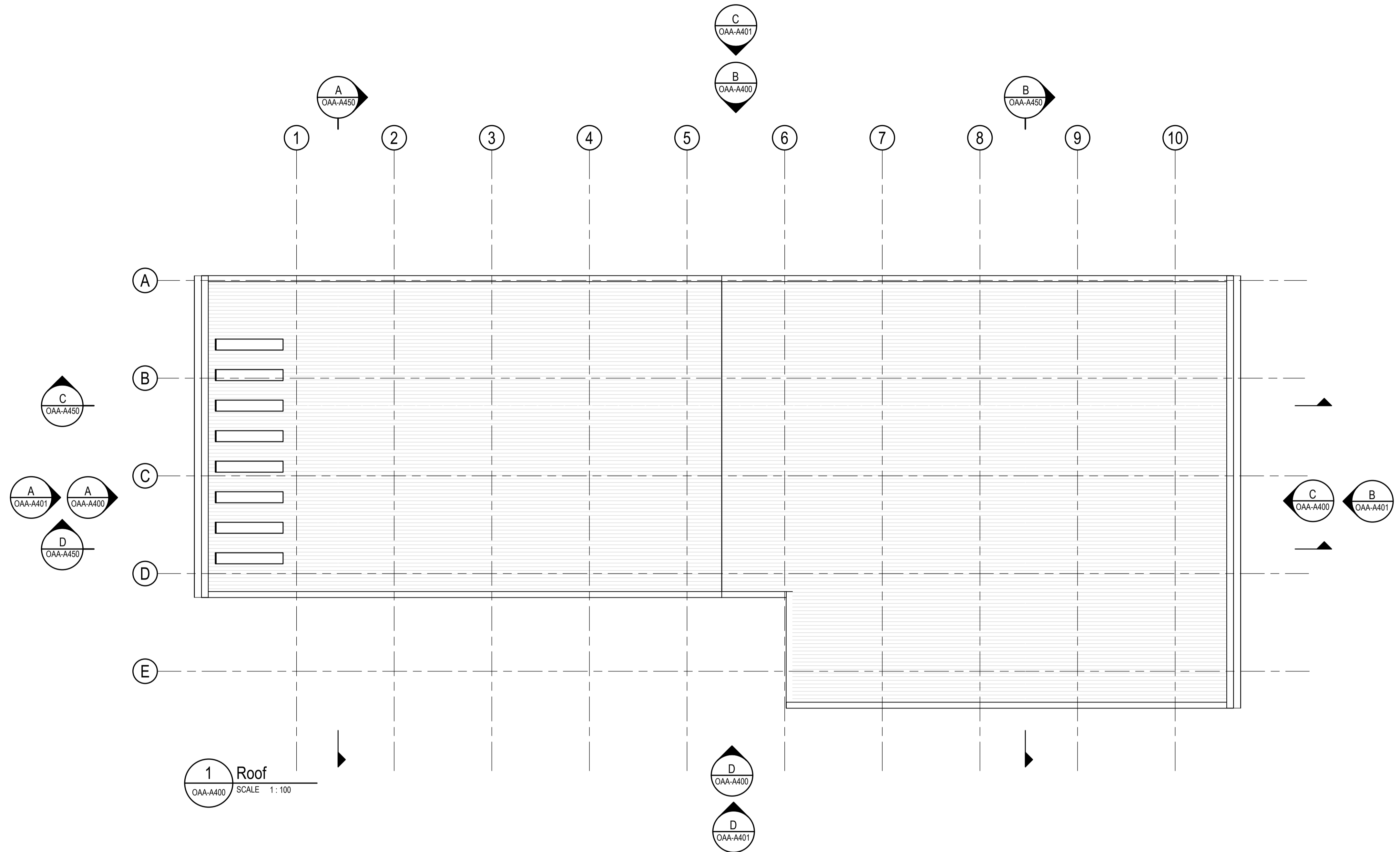
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 Project **OFFICE BUILDING**  
 Status

Drawing Title **GA PLANS - MEZZANINE**

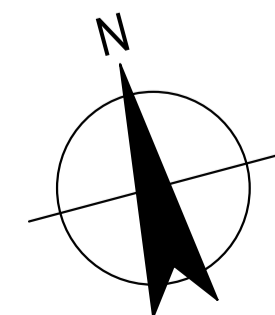
Drawing No.  
12593786-OAA-A101

Size  
A1

Rev



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Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



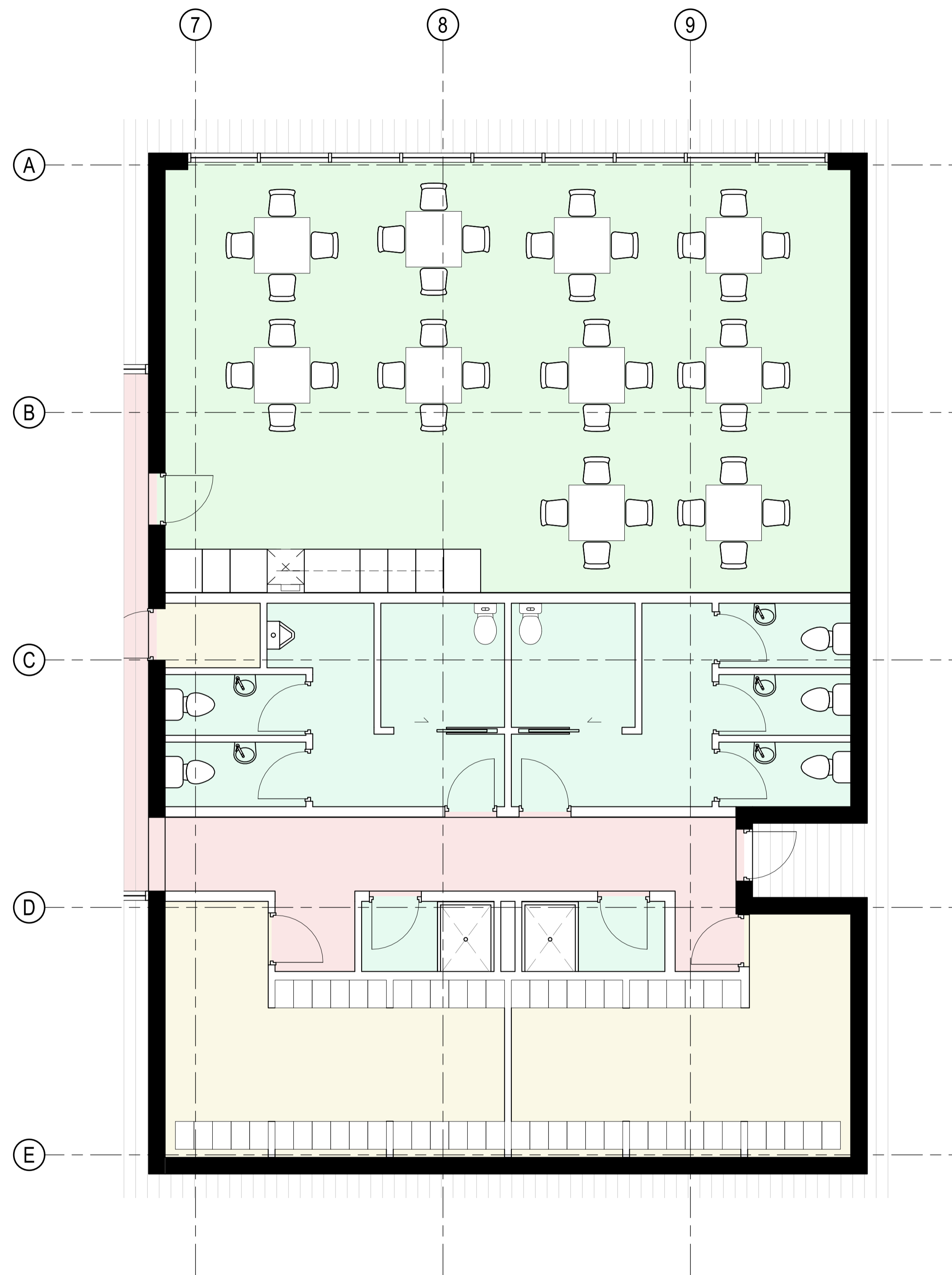
Project No.  
12593786

Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	OFFICE BUILDING
Status	

Drawing Title  
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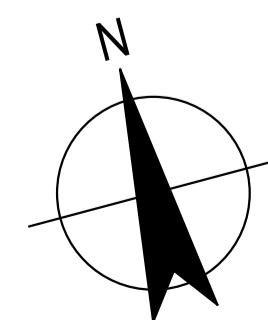
Drawing No.  
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Size  
A1  
Rev  
UR



1 EAST OFFICE ENLARGED PLAN  
 OAA-A100 SCALE 1:50

**UNDER REVISION**



Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
12593786

Client	ENVIROWASTE SERVICES Ltd (ESL)
Project	OFFICE BUILDING
Status	

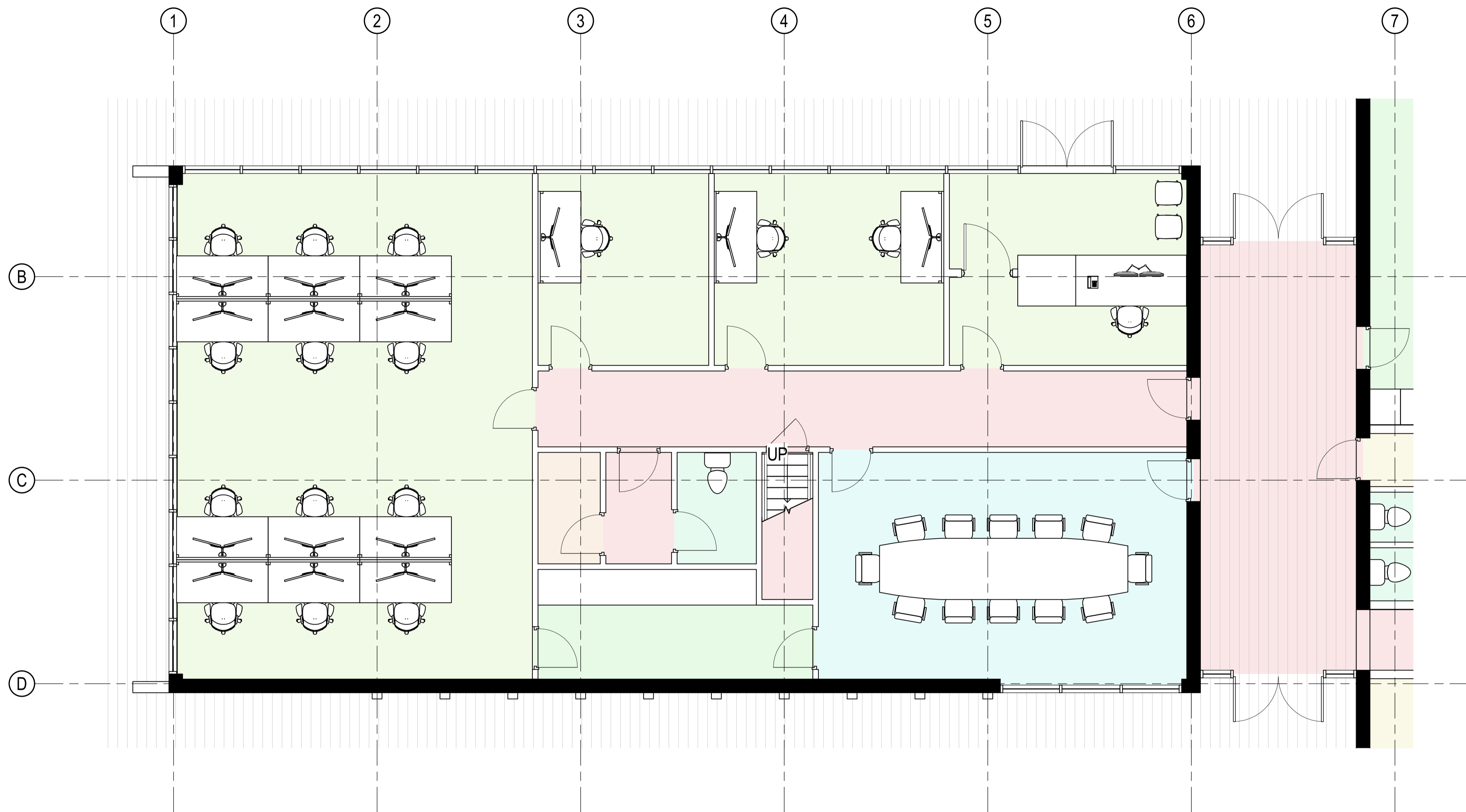
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Drawing No.  
12593786-OAA-A140

Size  
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Rev  
UR



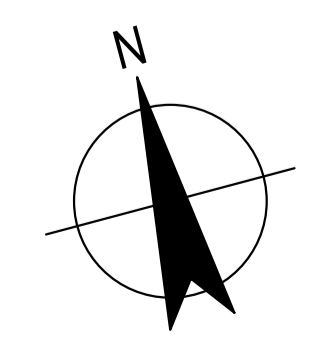


1 WEST OFFICE ENLARGED PLAN  
 OAA-A100 SCALE 1:50

**UNDER REVISION**

Rev	Description	Date

Author M. KIDD      Drafting Check T. REESE  
 Designer A. TRITT      Design Check S. BROWN



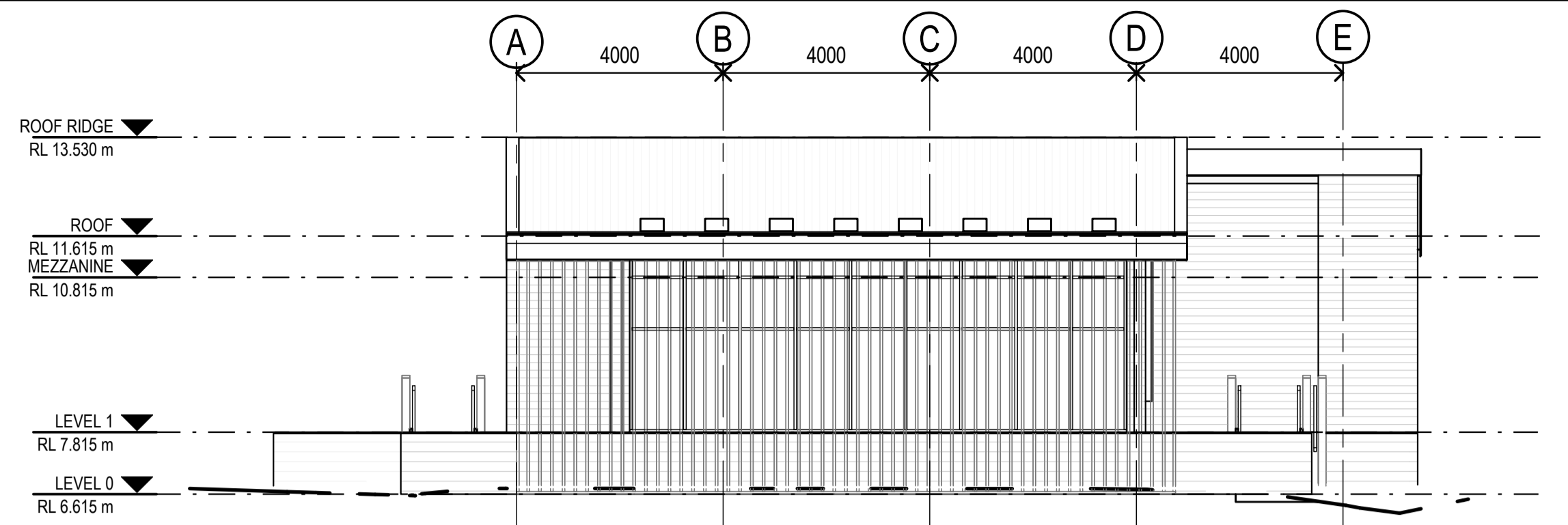
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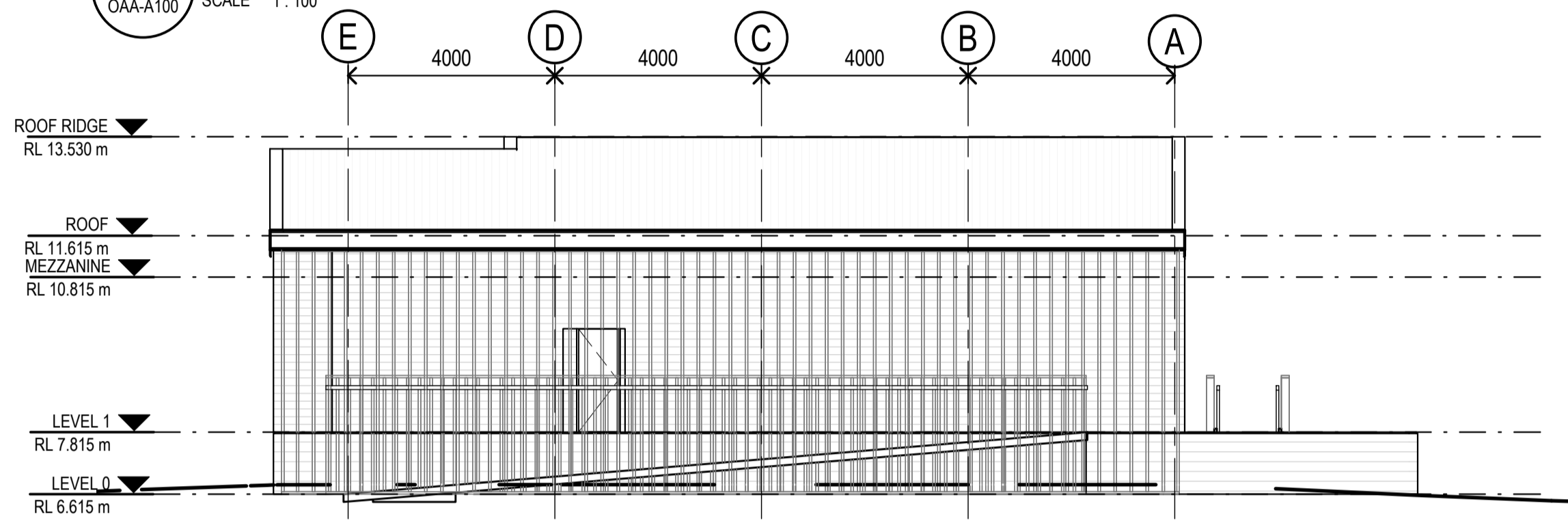
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 Project **OFFICE BUILDING**  
 Status

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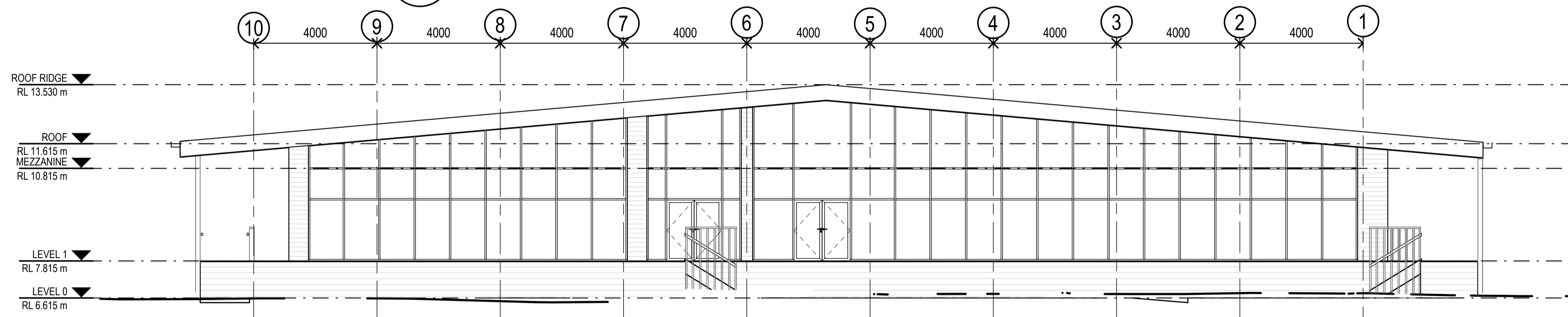
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 Drawing No. **12593786-OAA-A141**  
 Rev **UR**



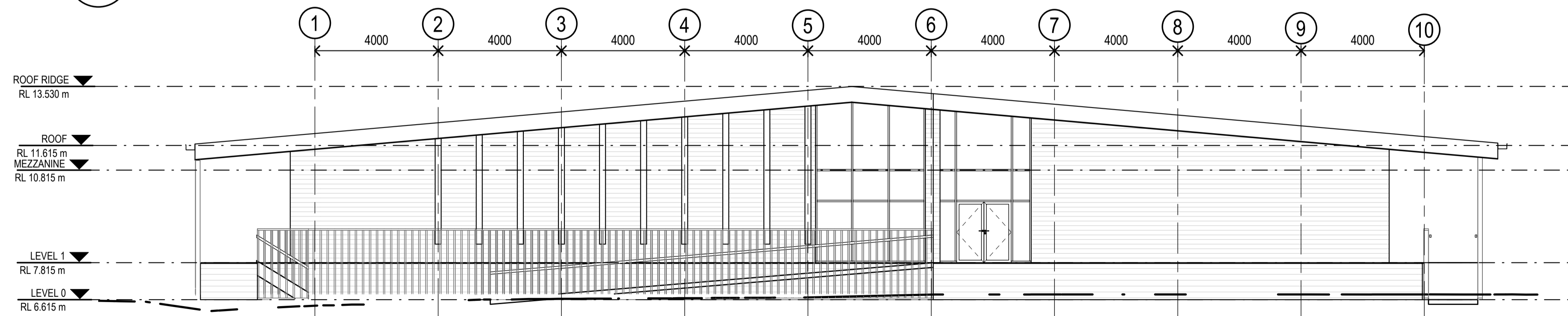
**A ELEVATION A**  
OAA-A100 SCALE 1:100



**C ELEVATION C**  
OAA-A100 SCALE 1:100



**B ELEVATION B**  
OAA-A100 SCALE 1:100



**D ELEVATION D**  
OAA-A100 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
12593786

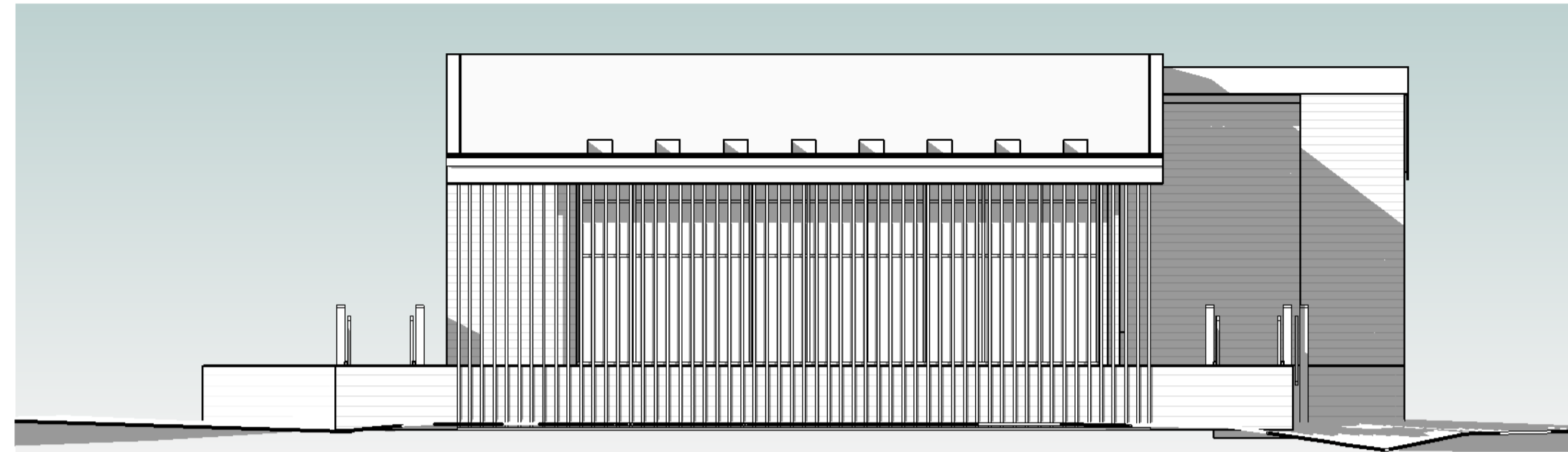
Client	ENVIROWASTE SERVICES Ltd (ESL)
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Drawing Title **GA ELEVATIONS**

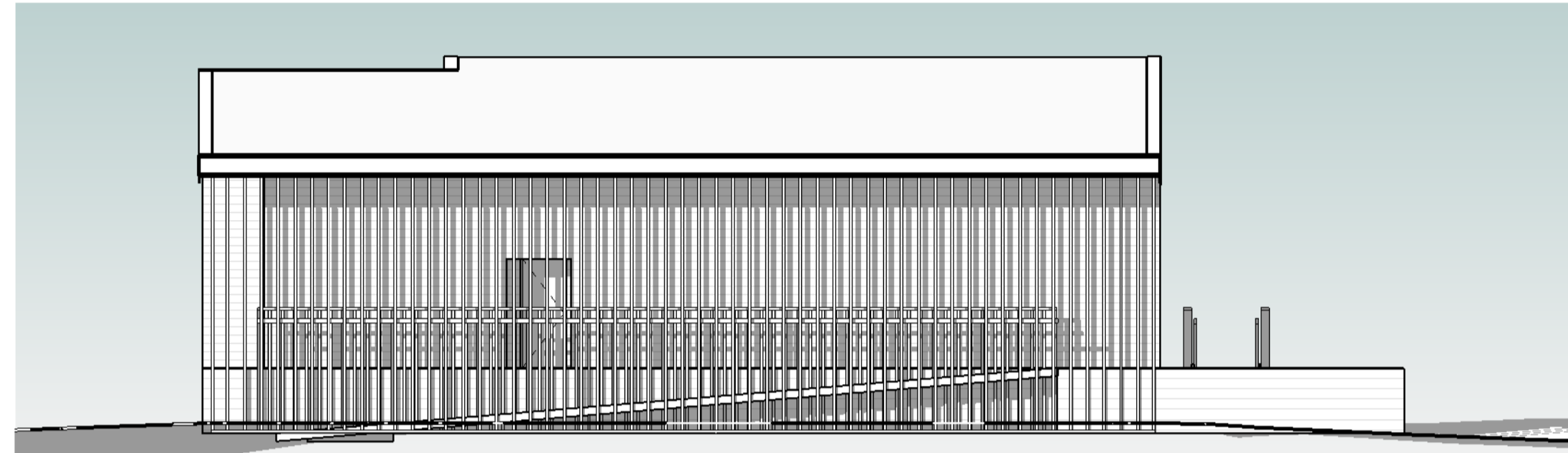
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Size  
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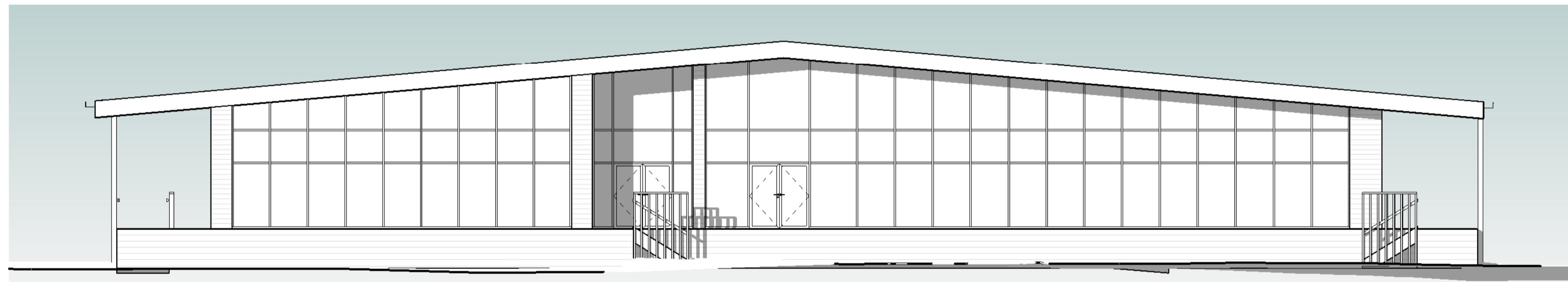
Rev  
UR



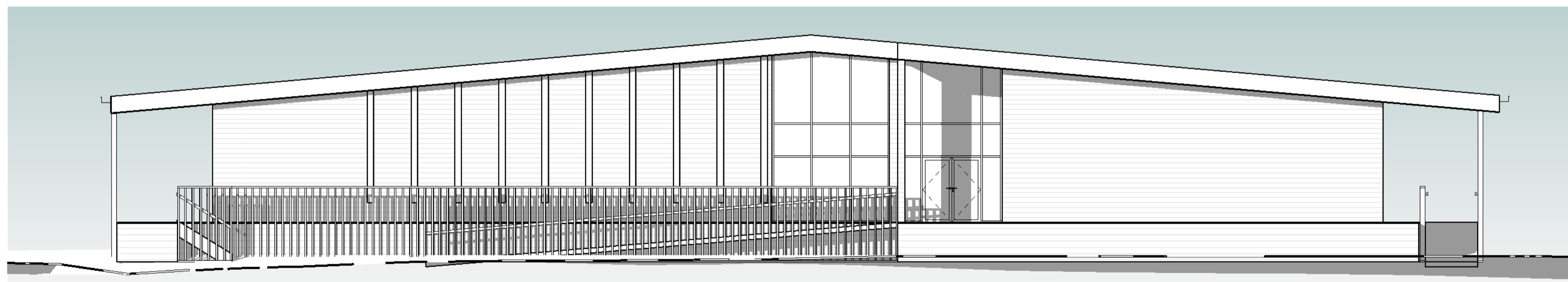
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OAA-A100 SCALE 1:100



**B** ELEVATION C  
OAA-A100 SCALE 1:100



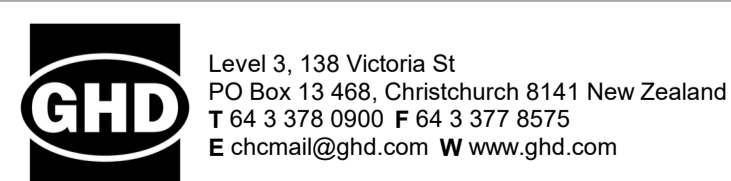
**C** ELEVATION B  
OAA-A100 SCALE 1:100



**D** ELEVATION D  
OAA-A100 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	

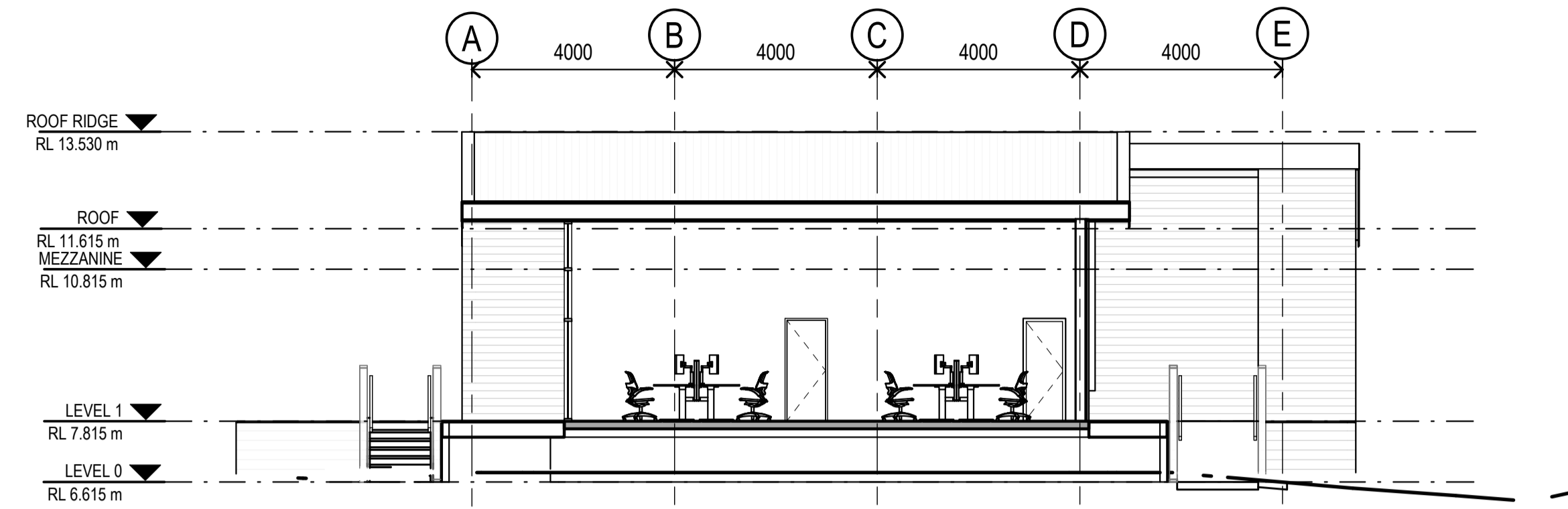


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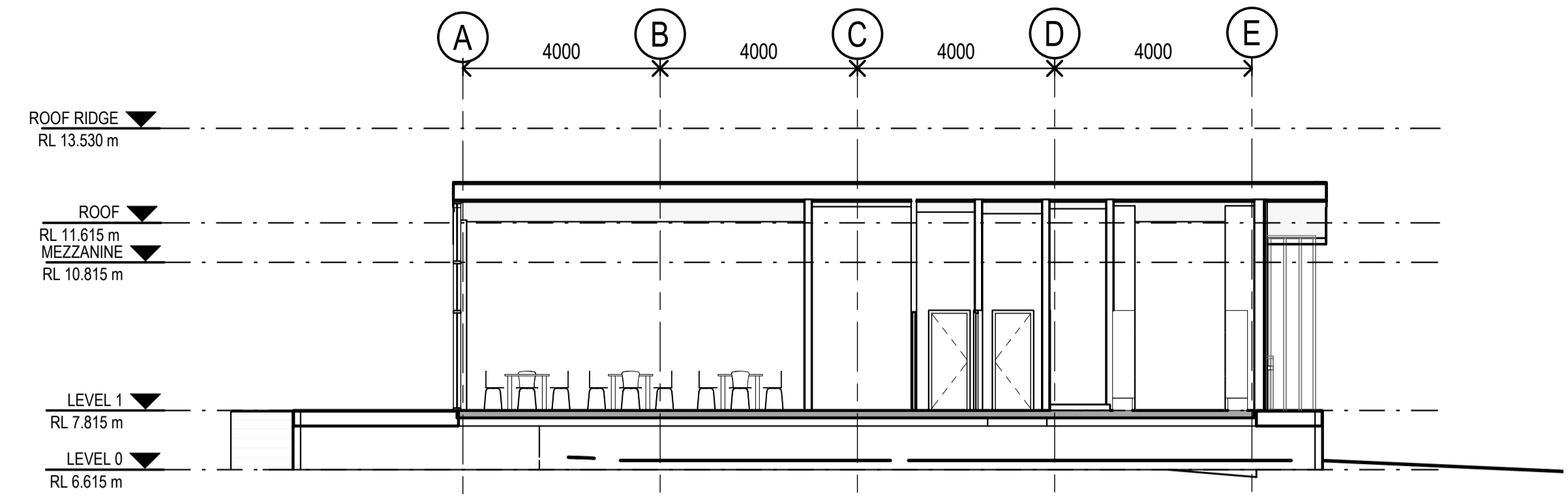
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Drawing No. **12593786-OAA-A401**

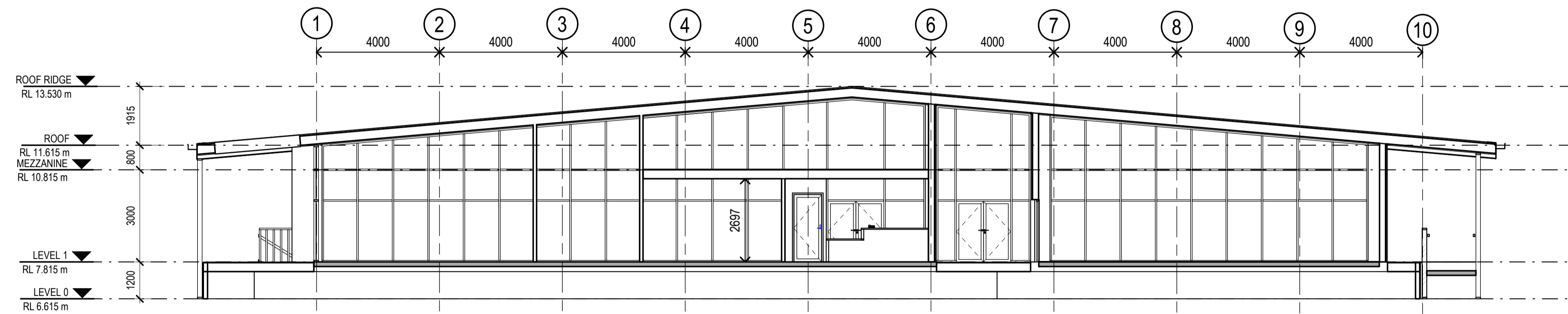
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Rev **UR**



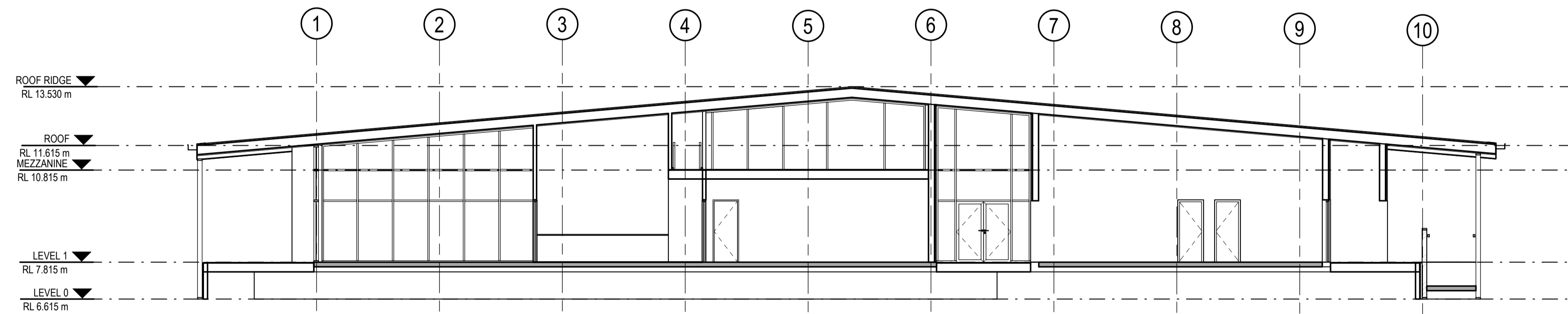
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**B SECTION B**  
OAA-A100 SCALE 1:100



**C SECTION C**  
OAA-A100 SCALE 1:100



**D SECTION D**  
OAA-A100 SCALE 1:100

**UNDER REVISION**

Rev	Description	Date
Author	M. KIDD	
Designer	A. TRITT	
Drafting Check	T. REESE	
Design Check	S. BROWN	



Project No.  
12593786

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Drawing Title  
GA SECTIONS

Drawing No.  
12593786-OAA-A450

Size  
A1

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