

Infrastructure Report

**Bangor Village
Hughes Developments Ltd**

Bangor Road • Darfield

21112

July 2026



S h a p i n g t h e f u t u r e s i n c e 1 8 8 0

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1. GENERAL

1.1. Introduction

Bangor Village is a proposed new residential subdivision at 160 Bangor Road, being a 130ha, residentially zoned site adjoining the existing township of Darfield, Canterbury (the Site). Bangor Village was approved as a referred project under the Fast-track Approvals Act 2024 (FTAA), and the authorised applicant, Hughes Developments Limited (HDL), is intending to apply for substantive approvals for Bangor Village under the FTAA. If approved, the project would enable:

- the subdivision and development of the Site to create:
 - 741 residential lots ranging between 629m² – 11,007 m² (1.1ha);
 - 4 local purpose reserves and 6 recreation reserves;
- all necessary infrastructure to service the development, including roading and pedestrian/cycling connections, three waters, street lighting and communications infrastructure;
- the retention and enhancement of existing water races as key placemaking features within the Site.

(the Project)

The overall development density to be created through the Project is approximately 5.5 lots/ha.

This infrastructure report addresses the infrastructure demand resulting from the Project along with the infrastructure required to service the Project. It also addresses matters relating to the construction of the Project, including the proposed earthworks, the proposed approach to addressing areas of contamination within the Site, and the proposed realignment of one of the water races on the Site.

The Site is bounded by SH73 to the east, Bangor Road / SH77 to the south, existing rural lifestyle blocks to the southeast and west, and rural land to the north. A block of land owned by the Selwyn District Council which accommodates a water extraction facility is also located on the northern boundary of the site. A site plan is attached as Appendix A.

The Site covers the complete Darfield 3 Development Area, being an Outline Development Plan (ODP) included for the Site in the Selwyn District Plan. It is noted in the ODP that the sites within the development area should average 1 Ha in size however the infrastructure, roading and general layout should allow future proofing for further subdivision. This Project provides a higher development density than is stipulated by the ODP at the outset which will allow for a more economical provision of infrastructure and provide more confidence that the development area will remain adequately serviced in years to come.

The proposed subdivision infrastructure construction will comply with the requirements of Selwyn District Council's (SDC) Engineering Code of Practice (ECOP). That infrastructure along with the operational stormwater discharge consent sought as part of the substantive application for the Project under the FTAA will vest in SDC upon completion.

The purpose of this report is to provide an assessment of the infrastructure servicing of the Project with respect to road access, wastewater, water supply, stormwater, electricity and telecommunications infrastructure.

1.2. Qualifications, experience and code of conduct

I, Jamie Verstappen, have prepared this report and have overseen or undertaken all investigation and design which has informed the information within. I hold a bachelor's degree in civil engineering from Canterbury University and am a Chartered Professional Engineer. I have 15 years' experience in the civil engineering field.

Although the substantive application for the Project is not being heard by the Environment Court, I have read and agree to comply with the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2023. I confirm that this report is within my area of expertise, except where I state that I rely upon the evidence or reports of other expert witnesses lodged forming part of the Project's substantive application. I have not omitted to consider any material facts known to me that might alter or detract from the opinions expressed.

1.3. Legal Description

The legal description for the Site is Lot 2 DP 81020 and Section 2 SO 438579 at 160 Bangor Road.

1.4. Topography

The topography of the Site is relatively flat and level, with a slight fall towards the southern side of the site. There are several undulations and historical overland flow paths which traverse the site from north to south with localised ground level variations of up to 1m.

The maximum variation in ground level across the Site is approximately 9m over the 1200m site length from Bangor Road. The maximum elevation within the site of 213.6m RL is at the northwestern boundary of proposed lot 712. The lowest elevation within the site of 204.4m is at the southeastern corner of proposed lot 28.

1.5. Water Races

There are two water races which form part of the Malvern irrigation network (managed by SDC) that traverse the Site, as illustrated in Figure 1 below (referenced as Waterways).

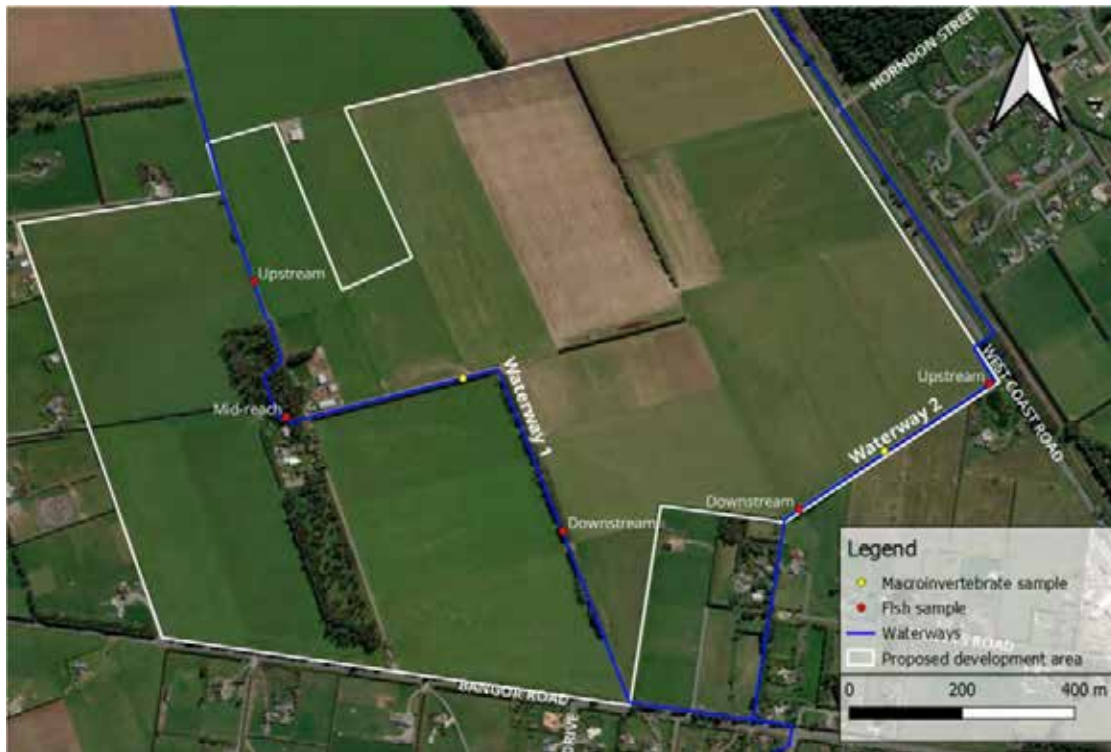


Figure 1 – Existing waterways.

Both Waterways will be protected and maintained during construction of the Project, and subject to various enhancement works. As illustrated in Figure 2 below, part of Waterway 1 will be realigned as part of the Project to follow a more natural flow path through the main open space/reserve area, and to follow road corridors in appropriate locations. New culverts will be constructed and will be appropriately sized to ensure the required flow capacity is achieved while remaining partially submerged during periods of low or no flow. The extent to which culverts are submerged, and their overall length will be designed to ensure positive outcomes for the aquatic habitat within the Waterways.

Culverts will be constructed using 450mm pipes which will provide suitable capacity for the peak water flows while maintaining enough redundant capacity to allow a natural substrate to build within the pipework to provide a more natural habitat for aquatic species. Headwalls will be constructed from stacked stone to minimise the visual impact of structures and provide a more natural appearance.

Consideration has been given in the design of the overall development layout to minimise the quantity of culverts to be installed for roads and vehicle crossings to lots. Generally, Waterway 1 has been located through reserves or down the centre of the main boulevard road to achieve this, however up to 7 vehicle crossing culverts will be required along Road 20 in Stage 18. These culverts will be installed by HDL during construction of the surrounding stage to minimise disruption to Waterway 1 and ensure correct procedure is followed during this installation.

The realignment of Waterway 1, enhancement works and the construction of the culverts will be carried out in accordance with management plans designed to minimise adverse impacts on the Waterways. These management plans will adopt best practice measures including:

- erosion and Sediment controls to ensure sediment is not discharged into the Waterways;
- fish salvage and release by specialist staff for areas where Waterways are to be realigned;
- maintaining waterway flow at all times during the works using bypass channels and/or overpumping;
- stabilisation of waterway banks following works using biodegrading weed mat following realignment or upgrading;
- the installation of native planting which is endemic to the area to provide shading to enhance waterway health; and
- completion of earthworks and planting during an appropriate season to ensure planting is not delayed in establishing

The construction for the Waterway realignment and the construction of the culverts and to undertake realignment works will generally be undertaken in accordance with the following methodology:

- installation of erosion and sediment control measures prior to commencement of earthworks near or within the waterways which have the potential to discharge sediment laden flow;
- installation of fish nets both upstream and downstream of the intended work area;
- fish salvage, removal and relocation undertaken by suitably qualified staff;
- establish stabilised bypass channels or overpumping to maintain drain flow;
- undertake earthworks, culvert installation, weed mat installation and planting;
- disestablish bypass channels or overpumping; and
- remove fish nets and maintain erosion and sediment control alongside the waterway until all adjacent works are completed and stabilisation achieved.



Figure 2 – Proposed realignment and culvert works.

1.6. Soils

A geotechnical investigation was undertaken for the site in June 2026 (attached to the substantive application). This geotechnical investigation was undertaken by ENGEO and includes information regarding the soil profile beneath the Site, groundwater levels and the anticipated seismic performance of the Site. Information was gathered from the relevant available geotechnical databases and site investigations including both scala penetrometer testing and machine excavated test pits.

Of particular relevance to the infrastructure strategy for the Project, the geotechnical investigations conclude that the soil profile beneath the Site comprises 0.2m to 0.3m of topsoil overlying 0.2m to 0.7m of silts and sands overlying natural medium dense to dense gravels to a depth of at least 265m depth. These gravels have a naturally high permeability and can provide a suitable drainage outfall for stormwater from the Site. Underlying sandy gravels will also provide filtration of sediment and contaminants from stormwater discharge, which coupled with the depth to groundwater, provides a favourable means of stormwater treatment and disposal which is common within the district.

The Environment Canterbury regional groundwater depth is interpreted to be present at 50m below ground level; however it is likely to be significantly deeper than this given information obtained from nearby bore logs which noted groundwater at around 100m depth.

Based on these conclusions, the Site is considered to meet the 'Good Ground' classification as defined in NZS 3604:2011 and is deemed suitable for residential use. Due to the ground conditions beneath the Site and the low groundwater depth, the Site is anticipated to perform as equivalent TC1. There

are no known or mapped faults in the immediate area of the Site. Please refer to the complete Geotechnical Investigation for further information.

1.7. Site Contamination

A combined Preliminary and Detailed Site Investigation was undertaken by ENGEO for the 160 Bangor Road property in June 2026 (attached to the substantive application).

This Investigation concludes the Site has been used for agricultural purposes since before 1940. A number of potentially contaminated areas were identified within the Site resulting from their historical use such as offal pits, burn pits, fuel storage areas, livestock dips and buildings which may contain asbestos. These areas were originally sampled and tested in September 2023 for contaminants with results showing contamination, in some locations, above allowable residential thresholds under the National Environment Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (NES-CS). Additional sampling and testing was undertaken in June 2026 at previously identified areas of concern to further delineate areas and to confirm contaminant concentrations present.

Where levels exceed the residential and recreational land use thresholds, the soil will either be remediated or will be removed from the Site in accordance with a Remedial Action Plan (RAP). In terms of the RAP, the following key initiatives will be adopted to minimise effects on the environment and human health:

- The re-use of contaminated soils in areas of lower sensitivity land use, for example recreational reserves.
- Blending of lower-level contamination with uncontaminated soils to bring the contamination within allowable residential limits.
- The safe disposal of contamination to appropriate waste facilities.
- Methodologies for the removal of contaminated soils.
- Monitoring and validation requirements to be undertaken by a Suitably Qualified Environmental Professional (SQEP).

In general, it is recommended that contaminated soils are remediated or removed prior to undertaking works within affected areas. It is expected that this will be a condition of consent.

2. EARTHWORKS

2.1 Overview

Concept earthworks plans are attached as Appendix B.

Earthworks will be required to construct the roads, accessways and other associated infrastructure,

form the building platforms and to enable the realignment of Waterway 1.

The majority of the required earthworks will be within the roads to create conveyance capacity and storage for stormwater and flood flow (described in the proceeding sections). As discussed in the proceeding sections, roads and reserve links will be used as secondary flow conveyance to ensure flood water can be safely conveyed through the Site in the event the onsite stormwater disposal systems become inundated.

Earthworks within the larger lots around the perimeter of the Site will be limited to a strip along their road frontage to smoothly transition levels to road berms and create level access to the lots. Given these larger lots will generally not be earthworked, easements will be provided for the conveyance of overland flow to ensure pre-development flow conditions are maintained in perpetuity. Additionally, these larger lots will be subject to a consent notice ensuring natural overland flow paths are maintained free of obstruction from buildings or further earthworks. Smaller lots will be shaped to ensure level building platforms are available at a suitable height to achieve the required flood clearance for finished building floor levels of 300mm above the 0.5% AEP flood level.

A key intention of the earthworks design across the Site will be to maintain the existing landform as closely as possible to minimise soil disturbing activities and to maintain natural drainage patterns and overland flow paths. It is expected that all soil encountered within the Site will be suitable for filling to residential development standards.

The area of development to be earthworked covers 101 ha of the 130 ha site as earthworks over the large perimeter lots of the site are not proposed. In terms of volumes, it is anticipated that approximately 730,000m³ of earthworks will be required to achieve the design landform across the development. The overall earthworks volume will be comprised of:

- 300,000m³ of topsoil strip
- 190,000m³ of cut to fill
- 240,000m³ of topsoil respread

The maximum cut and fill depths across the Site will be generally less than 800mm, up to 1.5m of fill will be required to reinstate the old channel following the realignment of Waterway 1. The maximum depth of excavation for drainage works will be 4m to construct stormwater soakpits within the Site.

Overall, it is anticipated that the earthworks will be a balanced cut and fill and that no material will be removed from Site (unless it is geotechnically unsuitable) and that no material will need to be imported to the Site.

2.2 METHODOLOGY

Earthworks will be undertaken in stages across the Site, and will be carried out in accordance with the following management plans designed to address the adverse effects of earthworks, including dust, and erosion, sediment release.

- An Erosion and Sediment Control Plan (ESCP) which will require, among other measures:

- The containment and disposal of potentially sediment laden stormwater flows through the use of temporary soakpits.
- Earthworks methodologies to be applied during construction to mitigate risk of sediment runoff.
- Contractor responsibilities in ensuring compliance with the Land and Water Regional Plan and any associated regional consents.
- Contractor responsibilities in ensuring compliance with the Selwyn District Plan and any relevant district council consents.
- A Dust Management Plan (DMP), which will require, among other measures:
 - The use of an onsite water cart and dust suppressant polymer application.
 - Available sources of water for use to control dust. These being the nominated Council bulk water extraction point in Darfield and each of the on site bores for up to 100m³ per day.
 - Earthworks methodologies to be applied during construction to mitigate risk of dust discharge.
 - A monitoring framework to assist the Contractor in compliance with the Canterbury Air Regional Plan.
- A Fish Management Plan (FMP).

All earth filling will be required to comply with NZS 4431:2022.

A draft ESCP and a draft DMP, are attached to the substantive application. These will be finalised prior to the commencement of earthworks and provided to SDC and ECan for certification. An FMP will be prepared and provided to ECan for certification prior to work being undertaken.

Earthworks will be undertaken in a staged manner across the site, with the stage boundaries reflecting the likely works boundaries. Earthworks over several stages may be undertaken at one time to provide work efficiencies and to assist in maintaining an earthworks balance. The amount of land being earthworked at any given time will not exceed 5ha. This will benefit in reducing the need for long term stockpiling of soils.

Any stockpiling will be undertaken near to the centre of the Site where possible to minimise dust risk to neighbouring sites. Appropriate sediment controls will be installed around stockpiles and all long-term stockpiles will be stabilised with vegetation or dust suppressing polymer. Stockpiling will comply with the permitted standards in the District Plan.

During construction of each stage of works, earthworks areas will be progressively, stripped, cut/filled, topsoiled and seeded. This will ensure the disturbed land area is maintained below the 5 ha threshold. Balance stages of the development site will be maintained in pasture and either mown or grazed with

stock until they are developed.

3. ROADING AND ACCESS

An Integrated Transport Assessment has been prepared for the Project by Novo Group and is provided as part of the substantive application (ITA). The ITA addresses compliance with the relevant district plan rules for road corridors, vehicle accesses and other transport features.

For the purposes of this report, the following section provides a high-level overview of the transport aspects of the Project.

3.1 Existing Road Network

The Site is currently adjoined by SH73 to the east and Bangor Road / SH77 to the south. There are no public roads or footpaths through the Site.

SH73 and Bangor Road / SH77 join at an intersection to the east of the Site, which is currently managed by stop and give way signs.

In terms of pedestrian connections, there is an existing 1.5m footpath along the southern side of Bangor Road which connects Piako Drive to the pedestrian network within the township. This footpath is currently in a poor state of repair.

The current speed limit along Bangor Road is 80 km/h at the eastern road entrance and 100 km/h at the western road entrance.

3.2 Proposed Access

Consistent with the ODP for the Site (and following discussions with NZTA), the Project proposes two new road access points to the Site from Bangor Road. The new intersections with Bangor Road will include carriageway widening to accommodate right turn bays, kerb and channel, asphalt surfacing to the centreline and streetlighting (illustrated in the landscape plans provided with the substantive application). The taper lengths for these new intersections have been designed in accordance with the NZTA Manual of Traffic Signs and Markings (MOTSAM).

The existing shallow swale and tree belt along the remainder of the Bangor Road berm will be tidied to ensure road drainage is easily maintained, otherwise it will remain in its current condition.

The existing 1.5m footpath along the southern side of Bangor Road between the Site and Darfield High School will be upgraded to a 2.5m width to provide a greater level of service for pedestrian and cycle connectivity. A pedestrian refuge island will be installed within Bangor Road to connect the pedestrian network within the Site to this shared path.

3.3 Road Design

The proposed carriageway widths within the Site vary between 8m and 11m. Legal widths are between 17m and 30m. Right of Ways will have a minimum carriageway width of 5m and a legal width of 10m.

Roading features such as thresholds, footpath crossings and intersections may be surfaced with cobblestones or other suitable materials at the discretion of SDC, this will be confirmed during detailed design. All roads and right of ways will be surfaced with either asphalt or 2 coat chipseal and all intersections with asphalt to protect against surface damage due to turning movements.

Wider roads around the Site perimeter will be a low impact design, formed with roadside swales. These grassed swales will be located within the berm areas and will provide conveyance for stormwater discharge from roads and lot frontages. The swales will be approximately 400mm deep and vehicle crossings will require culverts.

Consistent with other urban developments throughout Selwyn, kerb and channel will be established along narrower roads where there are higher concentrations of smaller lots and will also be installed at all road intersections to clearly delineate the edge of carriageway and protect against edge break.

The natural soil conditions at the Site will provide a suitable subgrade for new road pavements. Further testing will be undertaken to determine the subgrade CBR to be adopted for detailed pavement design.

Footpaths and cycleway access will be provided throughout the Site as shown on the Roding Concept Plans attached within Appendix C. The main boulevard roads with 24-30m legal widths will include a 2.5m shared path on one side and a 1.8m footpath on the other. The remainder of the local minor roads with 17m - 20m legal widths will include a single 1.8m wide footpath. A network of 2.5m shared paths will link the reserve areas throughout the Site and the boulevard. Street trees will be provided within road berms and new roads will be lit to Council standards.

Culvert vehicle crossings will be required for all lots with swales along their frontages. Details of these culvert crossings will be approved at the engineering approval stage and details provided to purchasers for their installation during house construction. Culvert crossings will also be required for lots along the eastern side of Road 20 in stage 18 to cross the waterway. These culvert crossings will be installed by the developer in accordance with the WWMP and Council approved design. All other vehicle crossings will be installed by lot owners in accordance with Selwyn District Plan requirements.

Due to the relatively flat site topography, road gradients will be minimal. To ensure the roads drain adequately, kerb and channel gradients will be no flatter than 1:500 and crossfall will be provided on all new pavements in accordance with the ECoP. The road levels will be set to ensure all flood flows within the road corridor are managed and directed away from building platforms and the Waterways, and along overland flow paths through the site. Road connections at site boundaries have been located such that any flow off site generally follows pre-development channels.

Concept roading plans and cross sections for within the site are attached within Appendix C.

The ITA suggests that the intersection between SH73 and Bangor Road will need to be upgraded when greater than 180 lots within the Site are developed. A conceptual design for a roundabout intersection has been undertaken to verify that sufficient space is available within the vested road corridor. The adjacent intersection of McLaughlins Road and Bangor Road would be upgraded provide a greater level of safety for motorists and pedestrians through the combined junction. It is confirmed that from an infrastructure perspective, both of these upgrades are able to be undertaken and will be done so in

accordance with both SDC ECoP and/or NZTA standards.

Conceptual road design drawings for the Bangor Road intersections are attached as Appendix D.

4. STORMWATER

4.1 Stormwater Design

The ground conditions on the Site (described in section 1.6 above) have significantly influenced the design of the stormwater network for the Site. As that section explains, the depth to groundwater and the nature of the soils themselves mean that stormwater can be suitably disposed to ground, with the soils providing sufficient soakage capacity and natural treatment to ensure that groundwater is not adversely impacted by stormwater discharge.

The conceptual stormwater layout is detailed within the Engineering Concept Plans, attached as Appendix C.

The key components of the stormwater design are:

1. For stormwater emanating from roofs and hardstand areas on private lots:
 - a. Stormwater will be directed to ground via soak pits constructed within the lot in accordance with the New Zealand Building Code.
 - b. The soakpits for all lots other than those around the perimeter of the Site will be required to dispose of flows up to and including the 10% AEP event of 1 hour duration.
 - c. The soakpits for large lots around the perimeter of the Site will be required to dispose of flows up to and including the 2% AEP event of any duration up to and including 24 hours.
2. All other stormwater from Site will be directed to the kerb and channel within the roads or roadside swales. The kerb and channel and/or roadside swales will convey stormwater to boulder backfilled soakpits located beneath the road berms which will be designed to accommodate the 2% AEP rainfall event of critical duration.
3. All flow over and above the 2% AEP storm event will be stored within the roadside swales or conveyed down contour through secondary flow channels (along the roads).

The overall stormwater network will be designed to ensure hydraulic neutrality for all 1% AEP events to ensure predevelopment flow conditions downstream of the site are maintained or lessened following development. This will be achieved by appropriately sizing soakpits as necessary.

Submerged inlets to soakpit manholes will separate floatable contaminants and rubbish prior to entering the stormwater soakage facilities. The proposed swales will provide for stormwater conveyance and a level of additional treatment prior to discharge to ground. Further filtration of

stormwater will occur as stormwater permeates the underlying sandy gravel prior to meeting groundwater. Due to low contaminant levels anticipated in the stormwater runoff for the Project and the depth to groundwater at the Site, no additional treatment requirements are expected.

All stormwater infrastructure is to be constructed in accordance with the ECoP and a Stormwater Management Plan (SMP), a draft of which is attached to the substantive application. The key measures in the SMP for ensuring the effective management of stormwater include:

- Stormwater design methodologies to ensure compliance with District and Regional Consents.
- Maintenance and monitoring requirements for the stormwater network.
- Provision of design calculations, catchments plans and as-built drawings.
- The developer held operational discharge consent.

All stormwater assets will be vested upon completion of the construction defects period.

Construction stormwater will be captured on site and conveyed to temporary soakpits located in accordance with the ESCP and the ECan Erosion and Sediment Control Toolbox will be used as the basis for sediment control on Site. Other measures for managing construction stormwater are outlined in the ESCMP.

Resource consent to authorise the discharge of both construction and operational stormwater discharge is being sought from ECan.

Following vesting of the stormwater network, and once the nominated defects period is complete, the operational stormwater discharge consent for the subdivision will be transferred to SDC.

4.2 Flood Flows

With the assistance of ECan, SDC has identified land across the Selwyn district which may be susceptible to flooding from that catchment. Flood flow generally travels north to south across the Site, following shallow natural drainage channels. Flood water is shown to enter the site at various locations along the northern boundary and discharge from the site at various locations along the southern boundary.

As illustrated in Figure 3 below, the Site has been shown to be affected by flooding in both the 1 in 200 year (0.5% AEP) and 1 in 500 (0.2% AEP) year storm events.



Figure 3 – Selwyn District Council Flood Mapping

Given the relatively flat and level nature of the site and surrounding land, the flood flow is not very concentrated with flood ponding shown across the full extent of the site. A slightly higher ponding depth and proportion of flow discharges from the site at the southeastern boundary, though ponding and flow off site is also shown along the full length of frontage to Bangor Road.

The flood mapping shows that several dwellings and other buildings downstream of the site are inundated by this flooding to varying degrees. The inclusion of formal soakage facilities associated with the development of the site will not worsen flooding of these properties, rather, they will reduce the flood flow off the site in the post development scenario thereby adding a layer of protection for downstream properties that currently does not exist.

The maximum ponded water depth within the site is shown to be <0.5m within the current Council model using the pre-development contours. The flood hazard within the site is shown to be low, as shown in Figure 4 below.

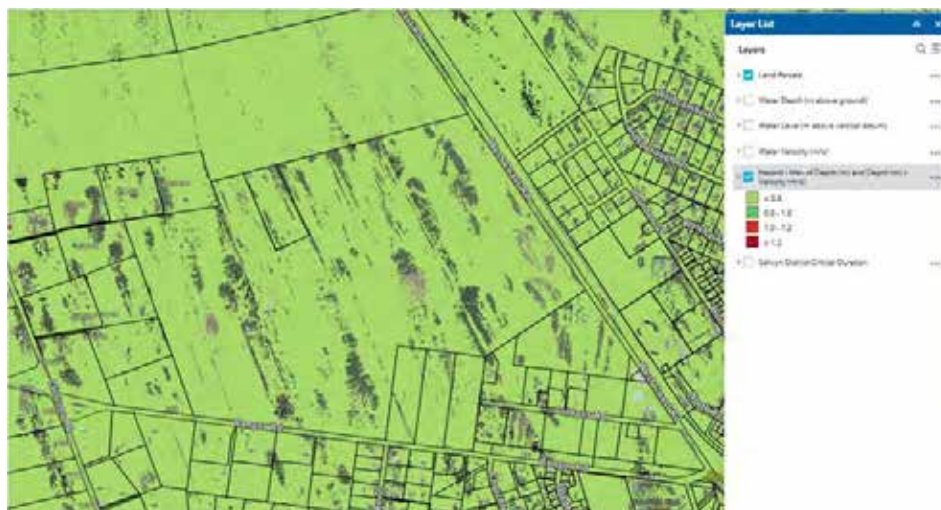


Figure 4 – Flood Hazard Map

To inform the response to the identified flood risk, a conceptual flood model has been undertaken over the Site, using rainfall data sourced from the NIWA High Intensity Rainfall Design System, accounting for a worst-case climate change scenario. The model incorporates the wider catchment upstream of the Site. The infiltration rates across the Site have been adjusted to account for the stormwater disposal systems operating at half of the designed capacity, as such the outputs are considered conservative. The model has been calibrated by comparison against the current Council model for the pre-developed site, then run over the design surface to generate post development flooding depths.

Drawing on the results of that modelling and the mapping undertaken by SDC/ECan, the following initiatives are proposed as part of the Project to ensure natural hazard risks from flooding in the 1 in 200 year (0.5% AEP) and 1 in 500 (0.2% AEP) year storm events are avoided:

- As outlined above, the stormwater network will be designed to accommodate rainfall events for up to a 2% AEP event.
- Additional storage for overland flows and rainfall will be provided in roadside swales, and the roading network will be designed to provide secondary conveyance of flood flows exceeding the 2% AEP event, directing those flows through the secondary flow network within the site to discharge at pre-development discharge locations.
- A consent notice will be registered on all titles created by the Project requiring the finished floor level of all new dwellings to achieve at least a 300mm clearance above the design level for the 1 in 200 year (0.5% AEP) event in accordance with the CRPS requirements. Water depths on the Site do not exceed 1m and the overall hazard rating is less than 1. No specific management of the 1 in 500 year event is therefore required.

The conceptual model outputs show that flood flows through the Site will not generate any adverse effects on properties within the Site and discharge downstream of the site is not greater than the pre-development scenario.

5. WASTEWATER

5.1 Existing Wastewater System

The Darfield township has recently been serviced by a gravity sewer network which is pumped to the Pines Wastewater Treatment Plant in Rolleston. A gravity sewer pipe has been extended from the wastewater pump station at the southern extent of the township, along Telegraph Road to the recently completed residential development on Kimberley Road. The intention is that all existing Darfield residential areas and future residential areas will eventually be connected to this pipe network which will replace the need for septic tank systems.

Selwyn Water Ltd (SWL) has plans to eventually extend this gravity network through the Darfield township to allow all residential properties to connect to it, noting this will take several years and substantial SWL investment to achieve. A catchment plan for proposed Darfield gravity sewer network

is attached as Appendix D.

The Site is included within the catchment for this gravity sewer main within a growth area encompassing the northeastern side of Darfield. A flow allowance of 16.9 l/s has been allowed for this growth area in the design of the downstream gravity network.

5.2 Wastewater Design

The Site is included within the catchment for this gravity sewer main within a growth area encompassing the northeastern side of Darfield. SWL has, in recent communication, confirmed that its preference for servicing the development area is using on site pumps and reservoir tanks. These pumps and tanks are to be supplied by EcoFlow and are to be the standard E-One model used in other residential areas throughout the country.

The pumps connect to a network of pressure sewer pipelines within the road berms where the pumps provide the pressure necessary to ensure flow is discharged through the network. The pumps and tanks would be privately owned and the pressure pipe network located within the road reserve vested with SWL. The pipe network will be sized according to the number of properties connected, with detailed hydraulic design undertaken by E-One to ensure self-cleansing flow is achieved and pipe pressure remains within the required range. A complete Hydraulic Design Report will be provided to SWL at the engineering approval stage. It is expected the pipe sizes will vary between DN50 and DN125 for the site. Pressure transducers, data loggers and flushing points will be installed in accordance with the ECoP.

The pressure sewer network will be connected to a main sewer outfall which will convey wastewater to the downstream gravity network at the most economical location. Currently this is at the corner of Cardale Street and Telegraph Road, however if the gravity network is installed nearer to the Site prior to commencement of construction, another location may be selected. Given the uncertainty of residence time within the pressure sewer network, appropriate odour control will also be required at the outfall to the gravity network. This would be provided by installing an Armatec Green Dome within the berm adjacent to the outfall manhole.

Each private reservoir tank would be sized to provide a suitable volume of redundant storage. Generally, this is 700 litres, which is approximately one days' worth of wastewater generated from a household. Other reservoir tank sizes are available off the shelf if more redundant storage is preferred by owners or required by SWL to provide further redundancy in the downstream network.

The Average Sewer Flow (ASF) from the Site is calculated as 5.09 l/s, using the ECoP specified calculation. The Maximum Flow (MF) is then calculated by adding a factor for the diurnal peak, storm peak and future densification.

Given the pressure network is completely sealed and large depth to groundwater, storm peak factors can be excluded from the MF calculation. The storage within the reservoir tanks will provide a natural buffer for diurnal peaks and a future densification factor of 20% is considered reasonable. Using a slightly reduced diurnal peaking factor of 2.0, the MF can then be calculated as 12.216 l/s which is well within the designed master planned allowance of 16.9 l/s for the development area. Subject to SWL

accepting a local pressure sewer network for use within the Site, sufficient capacity exists within the downstream network to accommodate the development of the Site as intended by this application.

Initially the pumps would function using a float switch installed within the unit which will provide some natural buffering of peak flow as the diurnal peak would be delayed for each dwelling depending on the tank level. Smart controllers are available for sewer tanks which can further reduce peak flows in the network by using redundant storage. These controllers can be easily retrofit to tanks in future and could be owned and operated by SWL, which would provide the ability to monitor and control flow in the network if it was to come under stress.

These controllers are not considered necessary given the Site would be discharging within the designed flow rate of the downstream network, but are an option to manage flow in the future to increase the number of connections the downstream sewer infrastructure can accommodate.

A conceptual layout of the pressure sewer infrastructure is included within Appendix C.

6. WATER SUPPLY

6.1 Existing Water Supply Network

SWL has existing water supply reticulation in the area, supplied by several groundwater extraction wells. The SDC well nearest to the Site is located in the SWL owned land at the northern boundary of the Site. A 300mm PVC pipe connects this well to the local water supply network through an easement along the northern boundary of the Site. SWL has indicated the current water extraction consent held by SWL will be able to provide the required supply capacity for the Site and all other planned development areas within the township.

A 150mm PVC watermain is installed along Bangor Road to the corner of Piako Drive and this will be the point of connection for initial development stages. This watermain reduces in size to 110mm ODPE to the west of Piako Drive. A 200mm watermain is located along the eastern berm of SH73.

There are two existing bores within the Site which are used for domestic supply and irrigation. These will be maintained for use during construction and decommissioned when the area surrounding them is developed. These bores are labelled L35/0276 and L35/0277.

6.2 Proposed Water Supply Network

The peak water supply loading of the proposed development of 741 lots is 100 l/s, calculated using ECoP. An allowance of an additional 20% capacity should be applied to cater for some further subdivision within the site in future, this brings the total residential loading to 120 l/s. Firefighting requirements for the Site will require a peak flow rate of 25 l/s combined with 60% of the residential peak which equates to 97 l/s.

Water within the Project will be supplied by a reticulated pipe system located within the road berms. Water mains will be linked to the surrounding network at two locations along Bangor Road. Connections to the 300mm pipe at the northern boundary of the site and 200mm pipe within SH73 are

also possible subject to SWL approval. It is expected at least three watermain connections to the surrounding network will be required to service the complete development. These connections can be progressively undertaken as required by the proposed staging and number of connections to be provided within each stage. If connections through future development areas are required to provide an adequate level of service, these connections will be protected by an easement in gross. A complete water supply model for the Site will be undertaken during detailed design. No upgrades to the surrounding SWL network are anticipated to be required. The provision of a large pipe connection across the Site between the Council facility and Bangor Road could provide benefit to the wider community, but would need to be undertaken at SWL's cost. It is not required to service the Project.

63mm submains will be installed within the Site as required within the opposite berm to the watermains to ensure water supply is available at the frontage of all new lots. 32mm ODPE metered water connections will be provided to each property boundary as per SDC standards. It is expected all water infrastructure will be vested in SWL upon completion of construction. In line with the ODP, all lots will also be required to have a rainwater harvesting tank installed with a pump which can be used for landscape watering and domestic water supply.

The proposed subdivision density, which is higher than envisaged by the ODP, will ensure that the eventual peak water loading can be more accurately estimated during the initial stages of design and construction which will ensure the network can provide sufficient supply for future.

The water supply system will be designed to meet the flow and pressure required by the New Zealand Fire Service Code of Practice. Hydrants will also be placed in accordance with this standard and water modelling will be undertaken during detailed design phase to ensure these requirements are met. The proposed water supply layout is shown within the Engineering Concept Plans attached as Appendix C.

7. ELECTRICITY AND STREETLIGHTING

The existing house within the Site is currently serviced for power supply by overhead lines which enter the site from the west. This existing supply will become redundant through the development works and will be removed when it is no longer required.

Orion has previously confirmed that capacity for 500 lots within the Site could be provided. A request for an updated servicing letter for the 741 lots proposed has been sent to Orion. This will be provided upon receipt, however servicing for the additional lots is not expected to be an issue.

The infrastructure will be laid underground in the roading reserve. It is estimated 15 new kiosks will be required for the proposed development density. Connection to the high voltage network is available at Bangor Road. All lots within the Project will be provided with a power supply connection at the lot boundary. All power reticulation installed within the Site will be taken over by Orion upon completion.

Streetlighting will need to be installed to residential standards as part of the proposed development works. All streetlighting will be located in the vested road reserve. A design of streetlighting will be undertaken and provided to SDC for approval during the detailed design stage.

A power supply capacity letter has been provided by Orion. This is attached as Appendix F.

8. TELECOMMUNICATIONS

The Site is currently serviced by Chorus via their standard rural supply. Chorus have confirmed their fibre telecommunications network is available in the area and this can be extended to the Site to provide servicing throughout. An overall network scheme would be undertaken by Chorus and detailed design then undertaken on a stage-by-stage basis in accordance with this scheme.

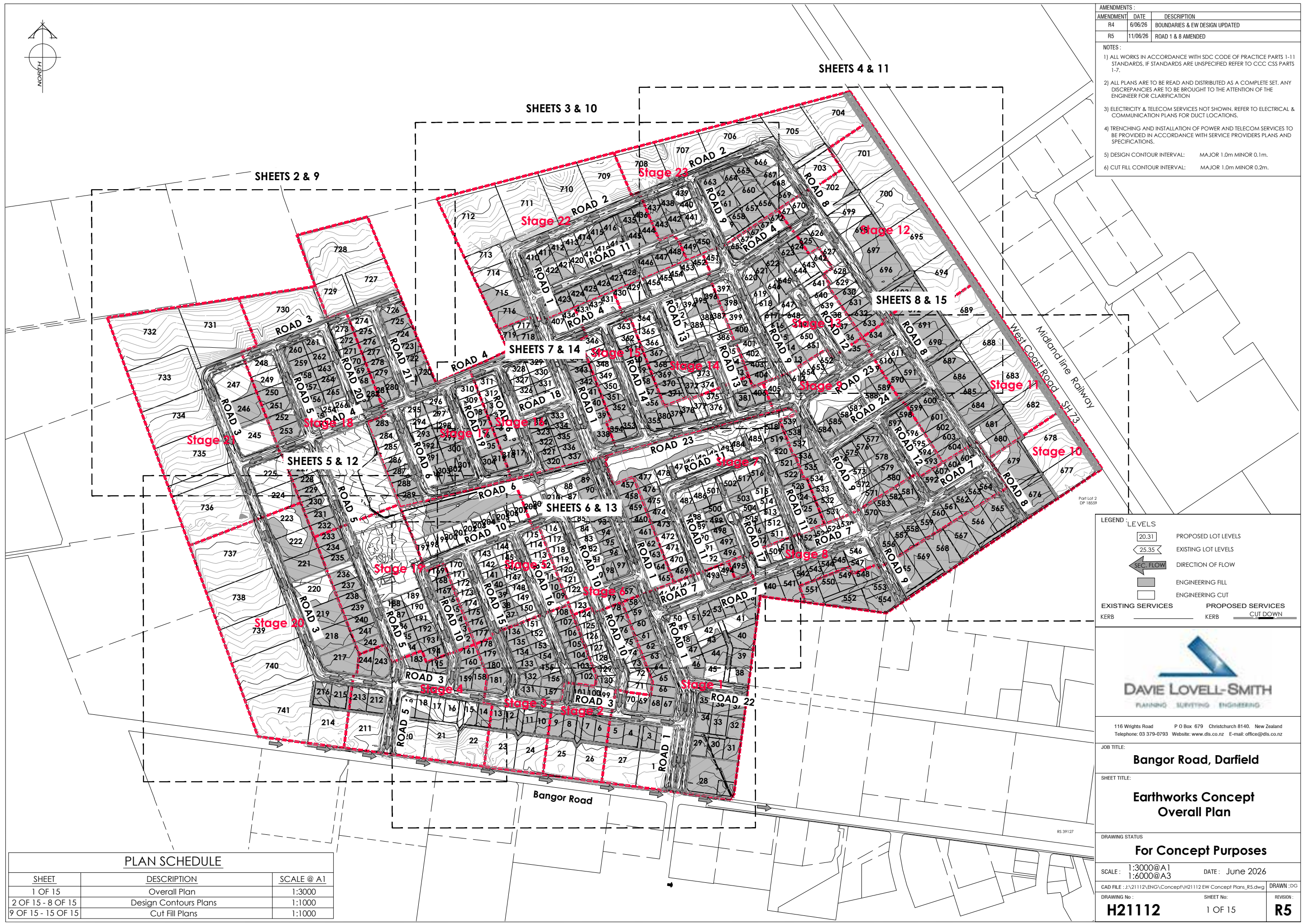
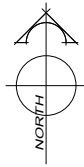
The telecommunications network will be installed within the road berms and handed over to Chorus upon completion.

A telecommunications capacity letter has been provided by Chorus. This is attached as Appendix H.

APPENDIX A - Site Location Plan



APPENDIX B – Earthworks Concept Plans



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & EW DESIGN UPDATED
R5	11/06/26	ROAD 1 & 8 AMENDED

NOTES :

1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.

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4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.

5) DESIGN CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

6) CUT FILL CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.2m.

LEGEND :	
	PROPOSED LOT LEVELS
	EXISTING LOT LEVELS
	DIRECTION OF FLOW
	ENGINEERING FILL
	ENGINEERING CUT
	EXISTING SERVICES
	PROPOSED SERVICES
	KERB
	CUT DOWN



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JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
Earthworks Concept Overall Plan

DRAWING STATUS:
For Concept Purposes

SCALE: 1:3000@A1
1:6000@A3

DATE: June 2026

CAD FILE: J:\21112\ENG\Concept\H21112 EW Concept Plans_R5.dwg

DRAWING No.: **H21112**

SHEET No.: 1 OF 15

REVISION: **R5**

PLAN SCHEDULE		
SHEET	DESCRIPTION	SCALE @ A1
1 OF 15	Overall Plan	1:3000
2 OF 15 - 8 OF 15	Design Contours Plans	1:1000
9 OF 15 - 15 OF 15	Cut Fill Plans	1:1000



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED
NOTES :		
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5) DESIGN CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.		
LEGEND :		
LEVELS		
	PROPOSED LOT LEVELS	
	EXISTING LOT LEVELS	
	DIRECTION OF FLOW	
EXISTING SERVICES		
KERB	_____	_____
PROPOSED SERVICES		
KERB	_____	CUT DOWN _____
		
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Bangor Road, Darfield		
SHEET TITLE:		
Earthworks Concept Design Contours		
DRAWING STATUS		
For Concept Purposes		
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H21112	2 OF 15	R5



Section 1
SO 438579

AMENDMENTS:		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED

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LEGEND:

LEVELS

20.31 PROPOSED LOT LEVELS

25.35 EXISTING LOT LEVELS

SEC. FLOW DIRECTION OF FLOW

EXISTING SERVICES PROPOSED SERVICES

KERB KERB CUT DOWN


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SHEET TITLE:
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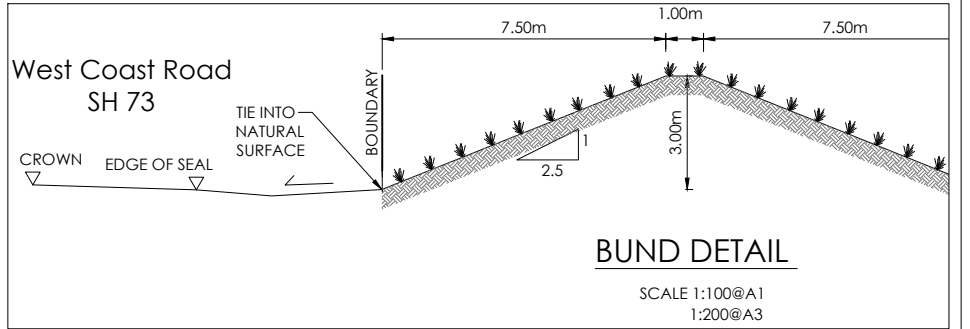
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AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED
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5) DESIGN CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.		



LEGEND :

LEVELS

20.31 PROPOSED LOT LEVELS

25.35 EXISTING LOT LEVELS

SEC. FLOW DIRECTION OF FLOW

EXISTING SERVICES KERB

PROPOSED SERVICES KERB CUT DOWN

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DATE: June 2026

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SHEET No.: 4 OF 15

REVISION: R5



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED

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LEGEND :

LEVELS

20.31

25.35

PROPOSED LOT LEVELS

EXISTING LOT LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN



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SHEET TITLE:

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DATE: June 2026

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SHEET No: 5 OF 15

REVISION: R5



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED

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5) DESIGN CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEGEND :

LEVELS

20.31

PROPOSED LOT LEVELS

25.35

EXISTING LOT LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN

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6 OF 15

R5



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED

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LEGEND :

LEVELS

20.31

PROPOSED LOT LEVELS

25.35

EXISTING LOT LEVELS

SEC.FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN

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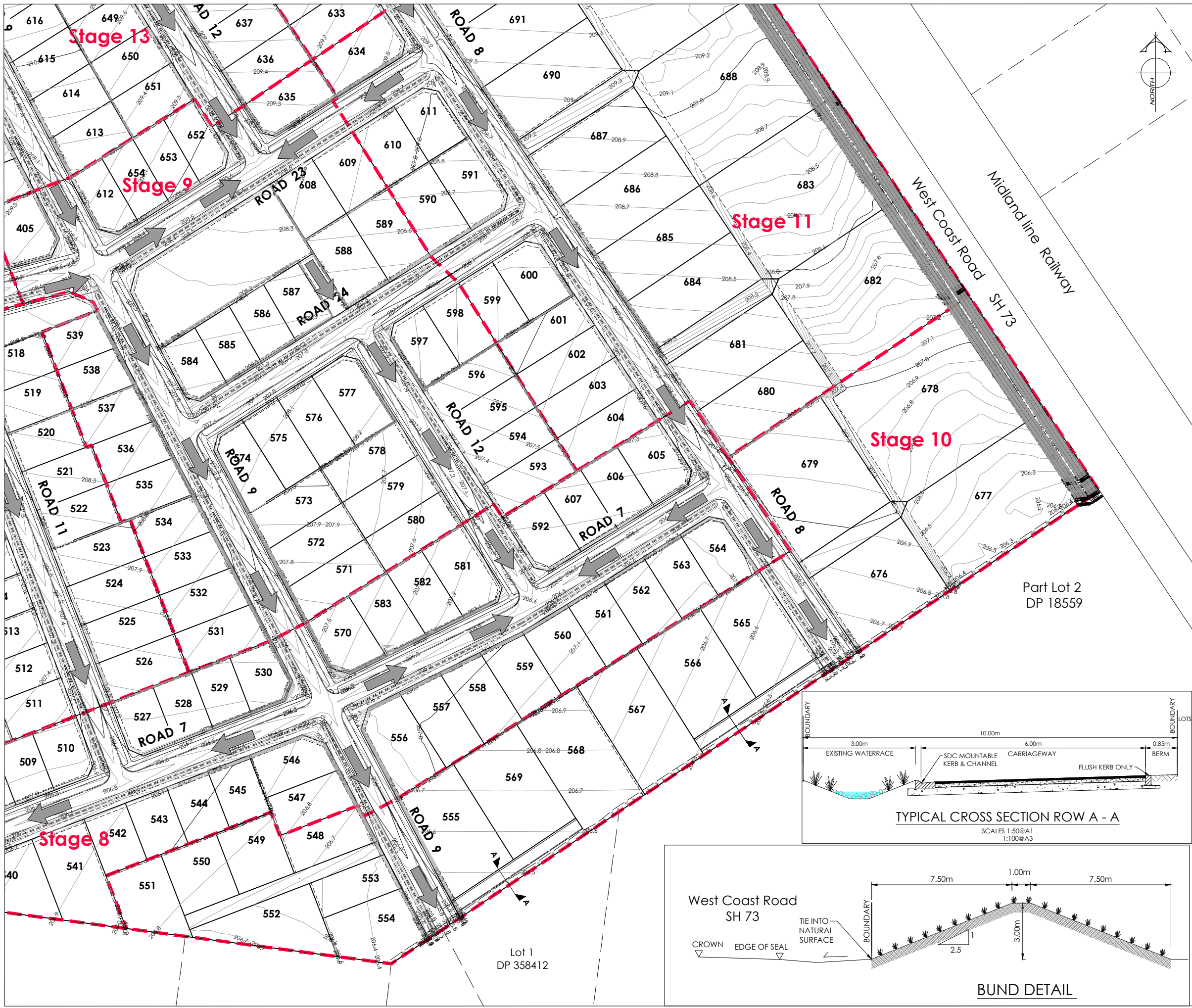
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SHEET No: 7 OF 15

REVISION: R5

Lot 1
DP 81020



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & DESIGN CONTOURS UPDATED
R5	11/06/26	DESIGN CONTOURS UPDATED & CROSS SECTION DETAIL ADDED

NOTES :

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LEGEND :

LEVELS

20.31

25.35

SEC. FLOW

PROPOSED LOT LEVELS

EXISTING LOT LEVELS

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN

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SHEET TITLE:
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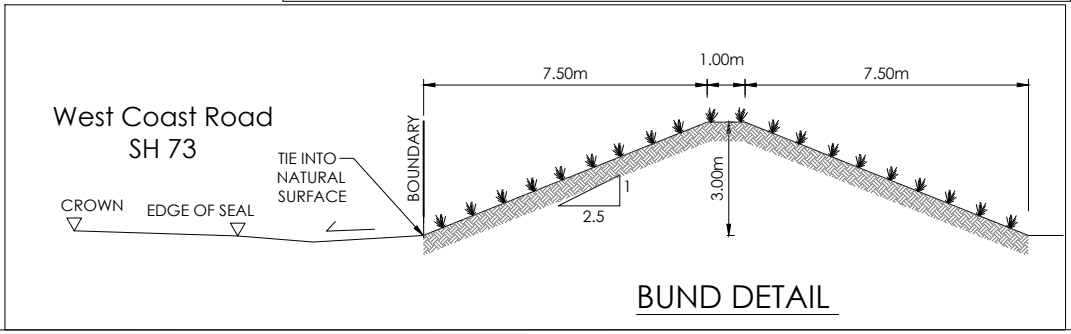
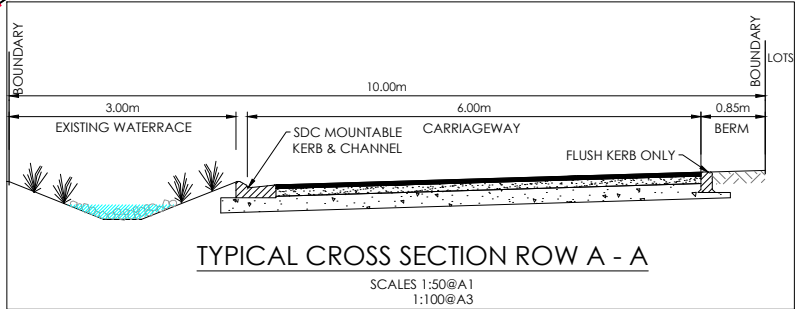
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SHEET No: 8 OF 15

REVISION: R5





AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & CUT FILL CONTOURS UPDATED
R5	11/06/26	CUT FILL CONTOURS UPDATED

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5) CUT FILL CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.2m.

LEGEND :

LEVELS

20.31

25.35

SEC. FLOW

PROPOSED LOT LEVELS

EXISTING LOT LEVELS

DIRECTION OF FLOW

ENGINEERING FILL

ENGINEERING CUT

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN



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SHEET TITLE:

Earthworks Concept
Cut Fill Plan

DRAWING STATUS

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DATE :

June 2026

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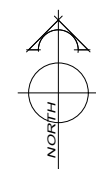
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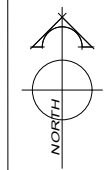
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9 OF 15

REVISION :

R5

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AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & CUT FILL CONTOURS UPDATED
R5	11/06/26	CUT FILL CONTOURS UPDATED

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LEGEND :

LEVELS

20.31

25.35

SEC. FLOW

ENGINEERING FILL

ENGINEERING CUT

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN

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JOB TITLE:
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SHEET TITLE:
Earthworks Concept
Cut Fill Plan

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AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
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LEVELS

20.31

25.35

SEC. FLOW

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KERB

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116 Wrights Road

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Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Earthworks Concept
Cut Fill Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: June 2026

CAD FILE : J:\21112\ENG\Concept\H21112 EW Concept Plans_R5.dwg

DRAWN : DG

DRAWING No : H21112

SHEET No: 12 OF 15

REVISION: R5



AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & CUT FILL CONTOURS UPDATED
R5	11/06/26	CUT FILL CONTOURS UPDATED

NOTES:

1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS. IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.

2) ALL PLANS ARE TO BE READ AND DISTRIBUTED AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION

3) ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.

4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.

5) CUT FILL CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.2m.

LEGEND:

LEVELS

20.31

25.35

SEC. FLOW

ENGINEERING FILL

ENGINEERING CUT

EXISTING SERVICES

PROPOSED SERVICES

KERB

CUT DOWN

DAVE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

116 Wrights Road

P O Box 679 Christchurch 8140. New Zealand

Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Earthworks Concept
Cut Fill Plan

DRAWING STATUS:

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: June 2026

CAD FILE: J:\21112\ENG\Concept\H21112 EW Concept Plans_R5.dwg

DRAWN: DG

DRAWING No: H21112

SHEET No: 13 OF 15

REVISION: R5



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & CUT FILL CONTOURS UPDATED
R5	11/06/26	CUT FILL CONTOURS UPDATED

NOTES :

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5) CUT FILL CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.2m.

LEGEND :

L.E.V.E.L.S

20.31

25.35

SEC. FLOW

ENGINEERING FILL

ENGINEERING CUT

EXISTING SERVICES

PROPOSED SERVICES

EXISTING LOT LEVELS

EXISTING LOT LEVELS

DIRECTION OF FLOW

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
**Earthworks Concept
Cut Fill Plan**

DRAWING STATUS:
For Concept Purposes

SCALE: 1:1000@A1 DATE: June 2026
 1:2000@A3

CAD FILE: J:\21112\ENG\Concept\H21112 EW Concept Plans_R5.dwg DRAWN : DG

DRAWING No : SHEET No: REVISION :

H21112 14 OF 15 **R5**

Lot 1
DP 81020



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & CUT FILL CONTOURS UPDATED
R5	11/06/26	CUT FILL CONTOURS UPDATED

NOTES :

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5) CUT FILL CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.2m.

LEGEND :

LEVELS

20.31

25.35

SEC. FLOW

ENGINEERING FILL

ENGINEERING CUT

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN



DAVIE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

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P O Box 679 Christchurch 8140. New Zealand

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Earthworks Concept
Cut Fill Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: June 2026

CAD FILE : J:\21112\ENG\Concept\H21112 EW Concept Plans_R5.dwg

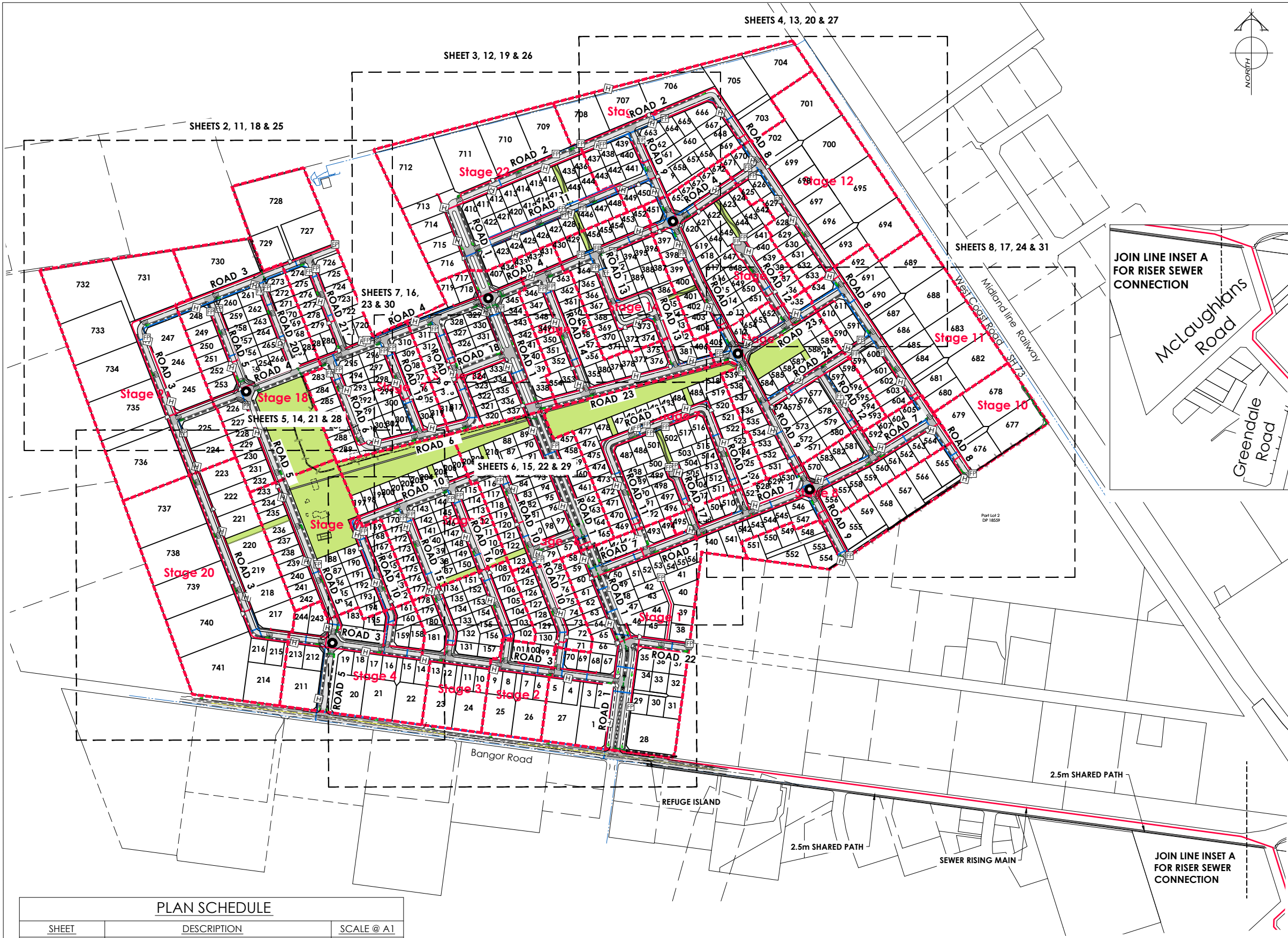
DRAWN : DG

DRAWING No : H21112

SHEET No: 15 OF 15

REVISION : R5

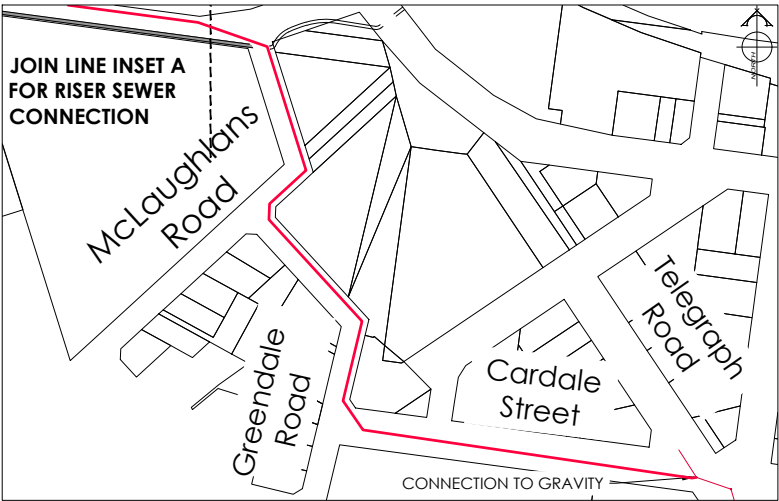
APPENDIX C - Engineering Concept Plans



AMENDMENTS:		
AMENDMENT	DATE	DESCRIPTION
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDBABOUTS ADDED

NOTES:

- 1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.
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LEGEND:	
	CHIP SEAL
	AC SURFACING
	STORMWATER SWALE
	SOAKAGE PIT
	FLUSHING POINT
	REDUCER
	WATER FH VALVE
	STORMWATER MH
	PRESSURE SEWER BEC
	KERB
	NEW FOOTPATH
	WATER FH VALVE METER
	STORMWATER MH
	PRESSURE SEWER BEC
	CUT DOWN

PLANNING SURVEYING ENGINEERING

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Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
Engineering Concept Overall Plan

DRAWING STATUS:
For Concept Purposes

SCALE: 1:3500@A1 DATE: July 2026
1:7000@A3

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg DRAWN: DG

DRAWING No: H21112 SHEET No: 1 OF 31 REVISION: R6

PLAN SCHEDULE		
SHEET	DESCRIPTION	SCALE @ A1
1 OF 31	Overall Plan	1:3500
2 OF 31 - 8 OF 31	Roadway Plans	1:1000
9 & 10 OF 31	Roadway Cross Sections	As Shown
11 OF 31 - 17 OF 31	Stormwater Plans	1:1000
18 OF 31 - 24 OF 31	Water Plans	1:1000
25 OF 31 - 31 OF 31	Pressure Sewer Plans	1:1000



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDBABOUTS ADDED

NOTES :

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LEGEND :

	CHIP SEAL		NEW FOOTPATH
	AC SURFACING		EXISTING SERVICES
	KERB		PROPOSED SERVICES
	CUT DOWN		

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Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
**Engineering Concept
Roading Plan**

DRAWING STATUS:
For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3
DATE: July 2026

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg
DRAWING No: **H21112**
SHEET No: 2 OF 31
REVISION: **R6**



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDABOUTS ADDED

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LEGEND :

	CHIP SEAL		NEW FOOTPATH
	AC SURFACING		
	EXISTING SERVICES		PROPOSED SERVICES
	KERB		KERB CUT DOWN

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JOB TITLE:
Bangor Road, Darfield

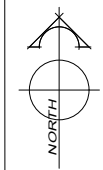
SHEET TITLE:
**Engineering Concept
Roading Plan**

DRAWING STATUS:
For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3 DATE: July 2026

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg DRAWN: DG

DRAWING No: **H21112** SHEET No: 3 OF 31 REVISION: **R6**



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDBABOUTS ADDED

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LEGEND :

CHIP SEAL

AC SURFACING

NEW FOOTPATH

EXISTING SERVICES

PROPOSED SERVICES

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Roading Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: July 2026

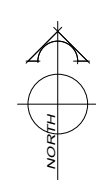
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DRAWN : DG

DRAWING No: H21112

SHEET No: 4 OF 31

REVISION: R6



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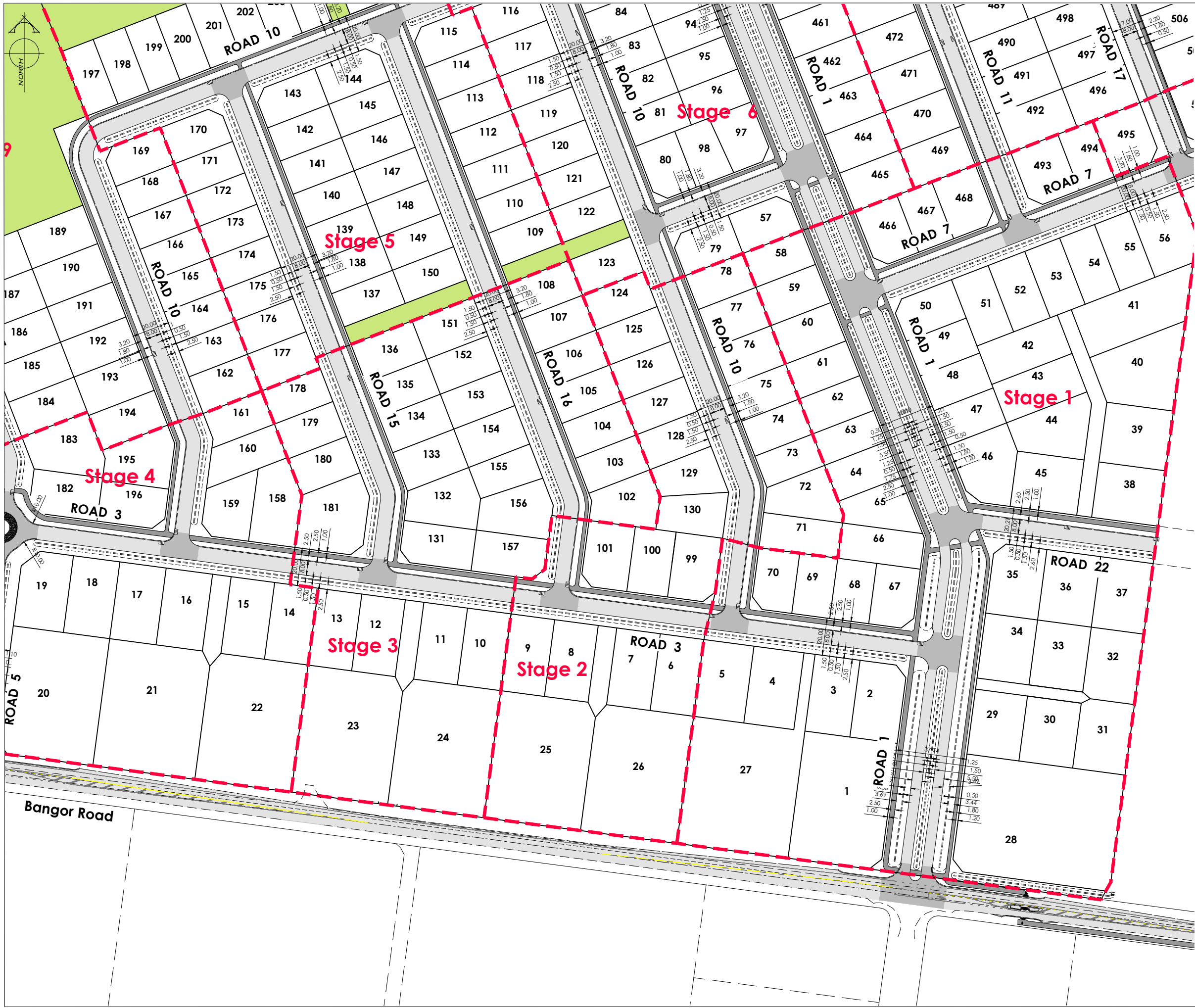
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9

1

23

AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDABOUTS ADDED
NOTES :		
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LEGEND :		
CHIP SEAL		NEW FOOTPATH
AC SURFACING		
EXISTING SERVICES		PROPOSED SERVICES
KERB		KERB <u>CUT DOWN</u>
DAVIE LOVELL-SMITH PLANNING SURVEYING ENGINEERING		
116 Wrights Road P O Box 679 Christchurch 8140, New Zealand Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz		
JOB TITLE:		
Bangor Road, Darfield		
SHEET TITLE:		
Engineering Concept Roading Plan		
DRAWING STATUS		
For Concept Purposes		
SCALE: 1:1000@A1 1:2000@A3		DATE: July 2026
CAD FILE : J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg		
DRAWING No :		SHEET No:
H21112		5 OF 31
		REVISION :
		R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDABOUTS ADDED

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LEGEND :

CHIP SEAL

AC SURFACING

NEW FOOTPATH

PROPOSED SERVICES

KERB

CUT DOWN



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PLANNING SURVIVING ENGINEERING

116 Wrights Road
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P O Box 679 Christchurch 8140. New Zealand

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Roading Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
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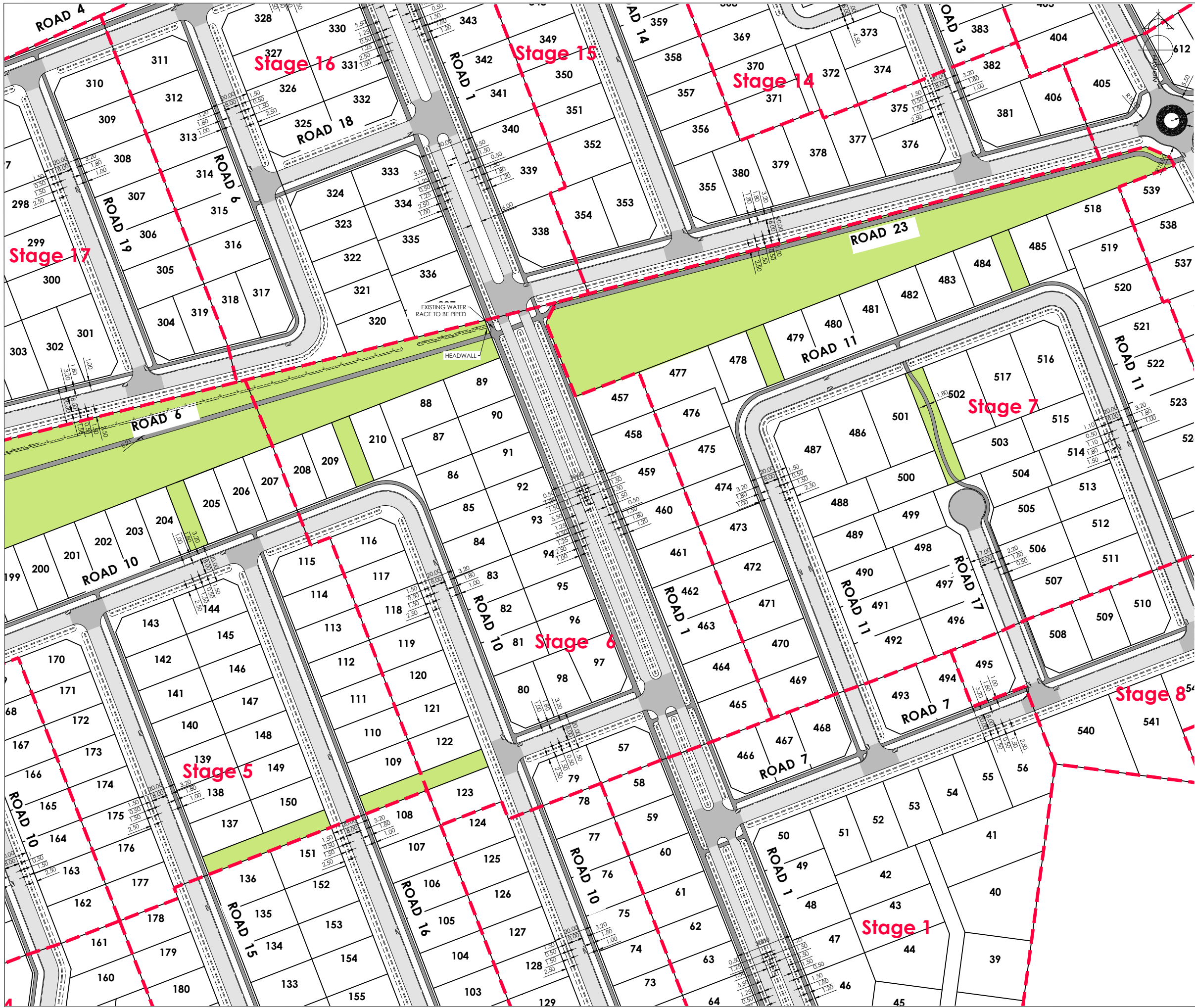
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DRAWING No : H21112

SHEET No: 6 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDABOUTS ADDED

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LEGEND :

CHIP SEAL

AC SURFACING

EXISTING SERVICES

KERB

NEW FOOTPATH

PROPOSED SERVICES

KERB

CUT DOWN



116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Roading Plan

DRAWING STATUS

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SCALE: 1:1000@A1
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DATE: July 2026

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg

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DRAWING No: H21112

SHEET No: 7 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & ROADING LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	ROUNDBABOUTS ADDED

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LEGEND :

CHIP SEAL

AC SURFACING

NEW FOOTPATH

EXISTING SERVICES

PROPOSED SERVICES

KERB

CUT DOWN



DAVE LOVELL-SMITH

PLANNING SURVIVING ENGINEERING

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Rooding Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: July 2026

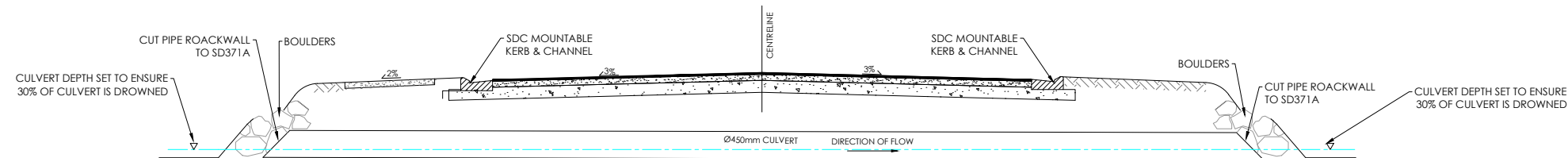
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DRAWN : DG

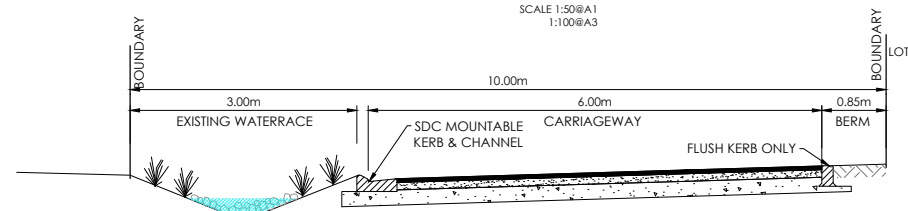
DRAWING No : H21112

SHEET No: 8 OF 31

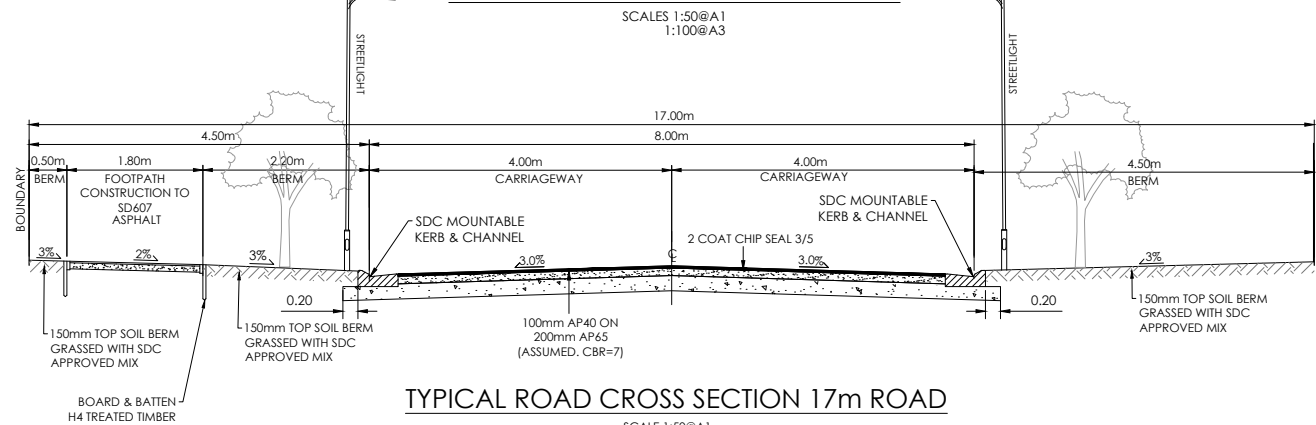
REVISION: R6



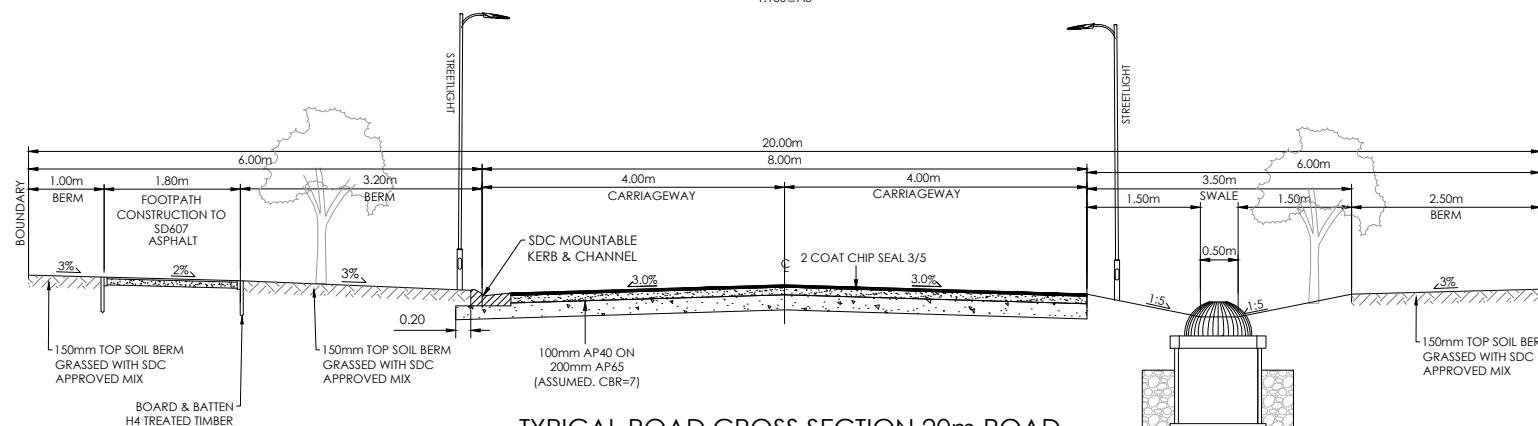
TYPICAL DETAIL FOR CULVERT CROSSING



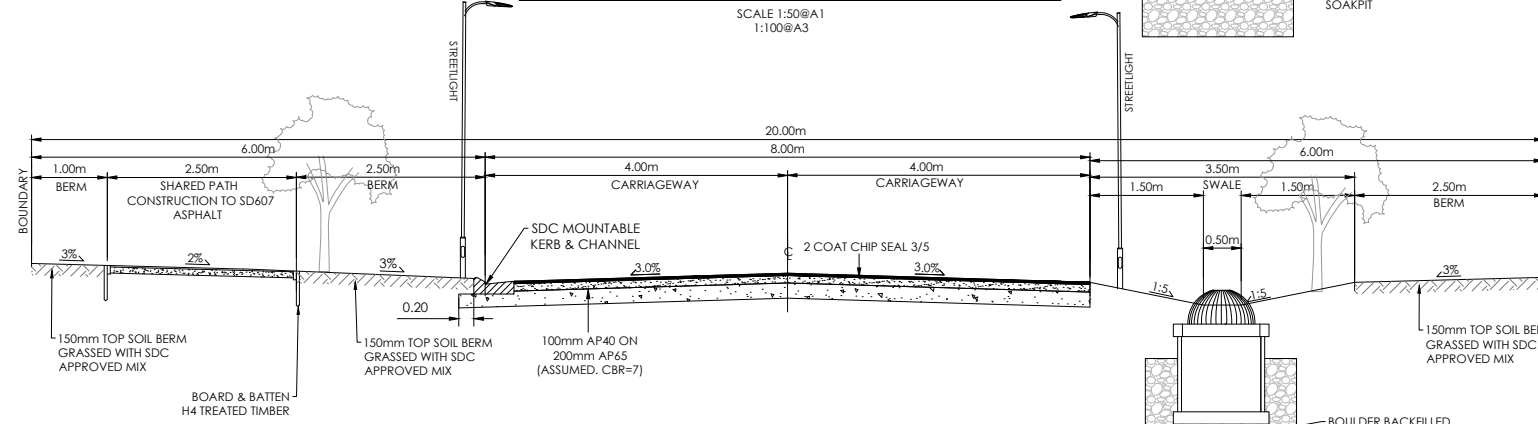
TYPICAL CROSS SECTION ROW A - A



TYPICAL ROAD CROSS SECTION 17m ROAD



TYPICAL ROAD CROSS SECTION 20m ROAD

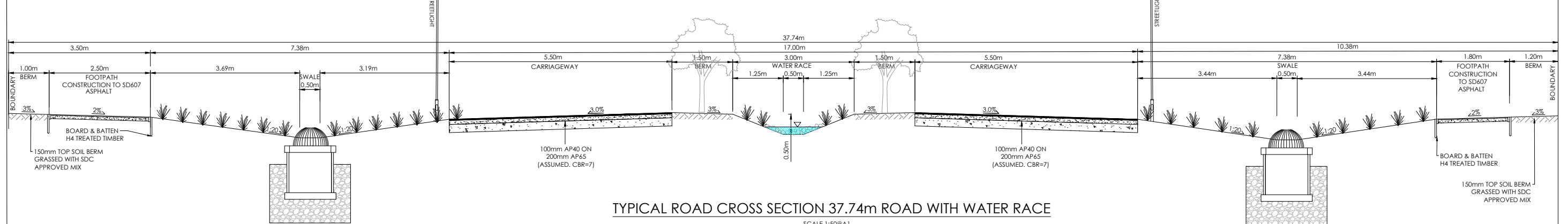


TYPICAL ROAD CROSS SECTION 20m ROAD WITH SHARED PATH

AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	24m ROAD CROSS SECTION REMOVED
R5	11/06/26	ROW A - A CROSS SECTION ADDED
R6	3/07/26	CULVERT DETAIL ADDED
NOTES :		
1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.		
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JOB TITLE:		
Bangor Road, Darfield		
SHEET TITLE:		
Engineering Concept Roding Cross Sections		
DRAWING STATUS:		
For Concept Purposes		
SCALE: As Shown		DATE: July 2026
CAD FILE : J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg		
DRAWING No : H21112		
SHEET No: 9 OF 31		REVISION : R6

NOTES:

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- 2) ALL PLANS ARE TO BE READ AND DISTRIBUTED AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION
- 3) ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.
- 4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.
- 5) EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS; COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. ALL SERVICES TO BE FULLY SEARCHED AND PILOTTED PRIOR TO TRENCHING.





AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

NOTES :

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

PROPOSED SERVICES

STORMWATER

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
Engineering Concept
Stormwater Plan

DRAWING STATUS:
For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: July 2026

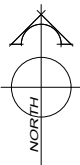
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DRAWN : DG

DRAWING No : H21112

SHEET No: 11 OF 31

REVISION : R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

PROPOSED SERVICES

STORMWATER

KERB

CUT DOWN

DAVIE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

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Website: www.dls.co.nz

E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept

Stormwater Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1

1:2000@A3

DATE: July 2026

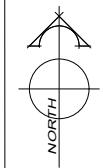
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DRAWN : DG

DRAWING No: H21112

SHEET No: 12 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

PROPOSED SERVICES

STORMWATER

KERB

CUT DOWN

PLANNING SURVEYING ENGINEERING

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Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Stormwater Plan

DRAWING STATUS

For Concept Purposes

SCALE : 1:1000@A1
1:2000@A3

DATE : July 2026

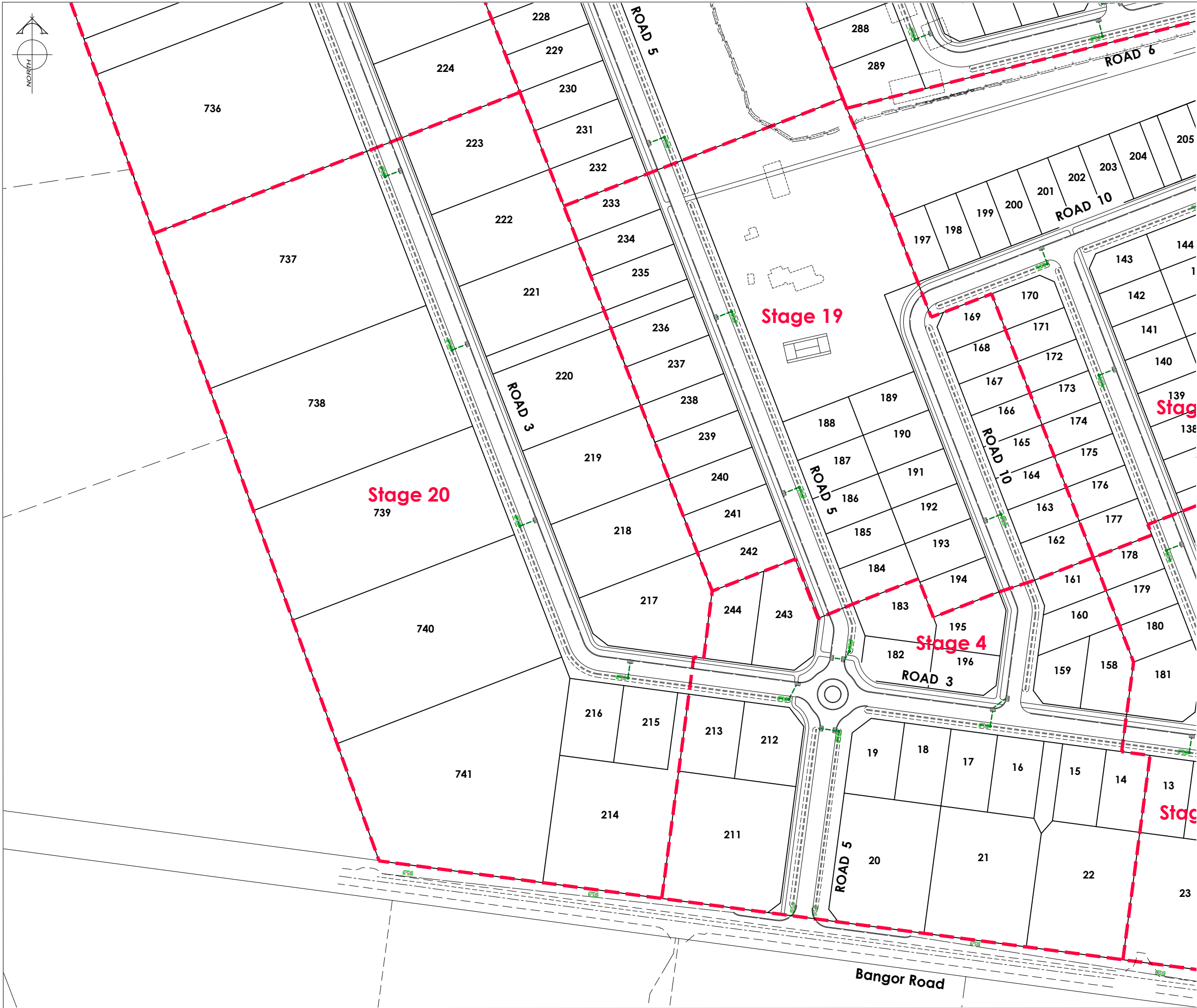
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DRAWN : DG

DRAWING No : H21112

SHEET No: 13 OF 31

REVISION : R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

NOTES :

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

PROPOSED SERVICES

STORMWATER

KERB

CUT DOWN

DAVIE LOVELL-SMITH

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept Stormwater Plan

DRAWING STATUS

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SCALE:

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DATE:

July 2026

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DG

DRAWING No :

H21112

SHEET No:

14 OF 31

REVISION :

R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

PROPOSED SERVICES

STORMWATER

KERB

CUT DOWN

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JOB TITLE:

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SHEET TITLE:

Engineering Concept Stormwater Plan

DRAWING STATUS

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July 2026

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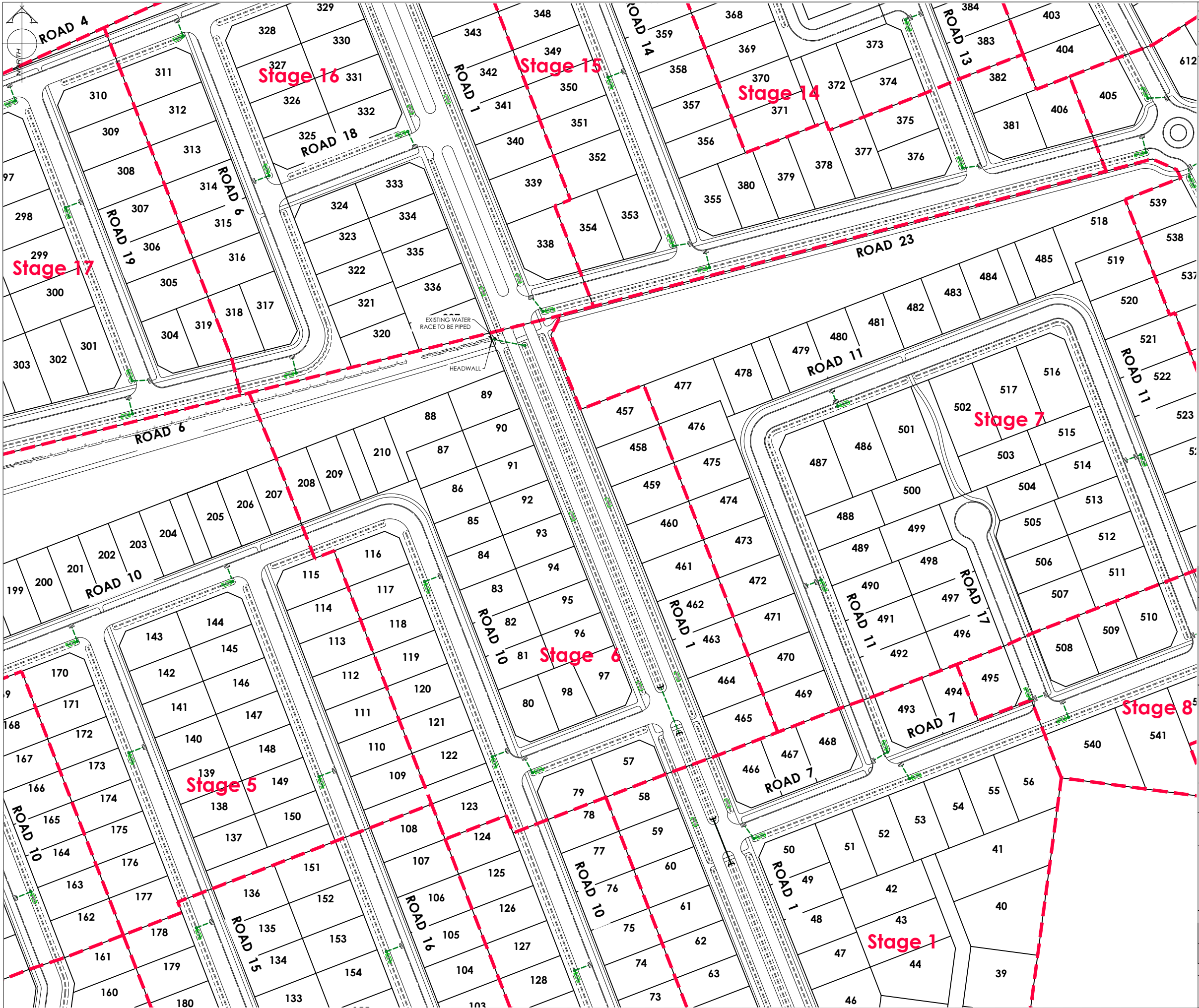
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SHEET No :

15 OF 31

REVISION :

R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

MH

PROPOSED SERVICES

STORMWATER

CUT DOWN

MH

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Stormwater Plan

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SCALE :

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DATE :

July 2026

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DRAWING No :

H21112

SHEET No:

16 OF 31

REVISION :

R6



Part Lot 2
DP 18559

AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & SEWER LAYOUT UPDATED
R5	11/06/26	SEWER PUMP LOCATION UPDATED
R6	3/07/26	SW LAYOUT AT ROUNDABOUTS UPDATED

NOTES :

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LEGEND :

STORMWATER SWALE

SOAKAGE PIT

EXISTING SERVICES

STORMWATER

KERB

MH

PROPOSED SERVICES

STORMWATER

KERB

MH

CUT DOWN

DAVE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Stormwater Plan

DRAWING STATUS

For Concept Purposes

SCALE :

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DATE :

July 2026

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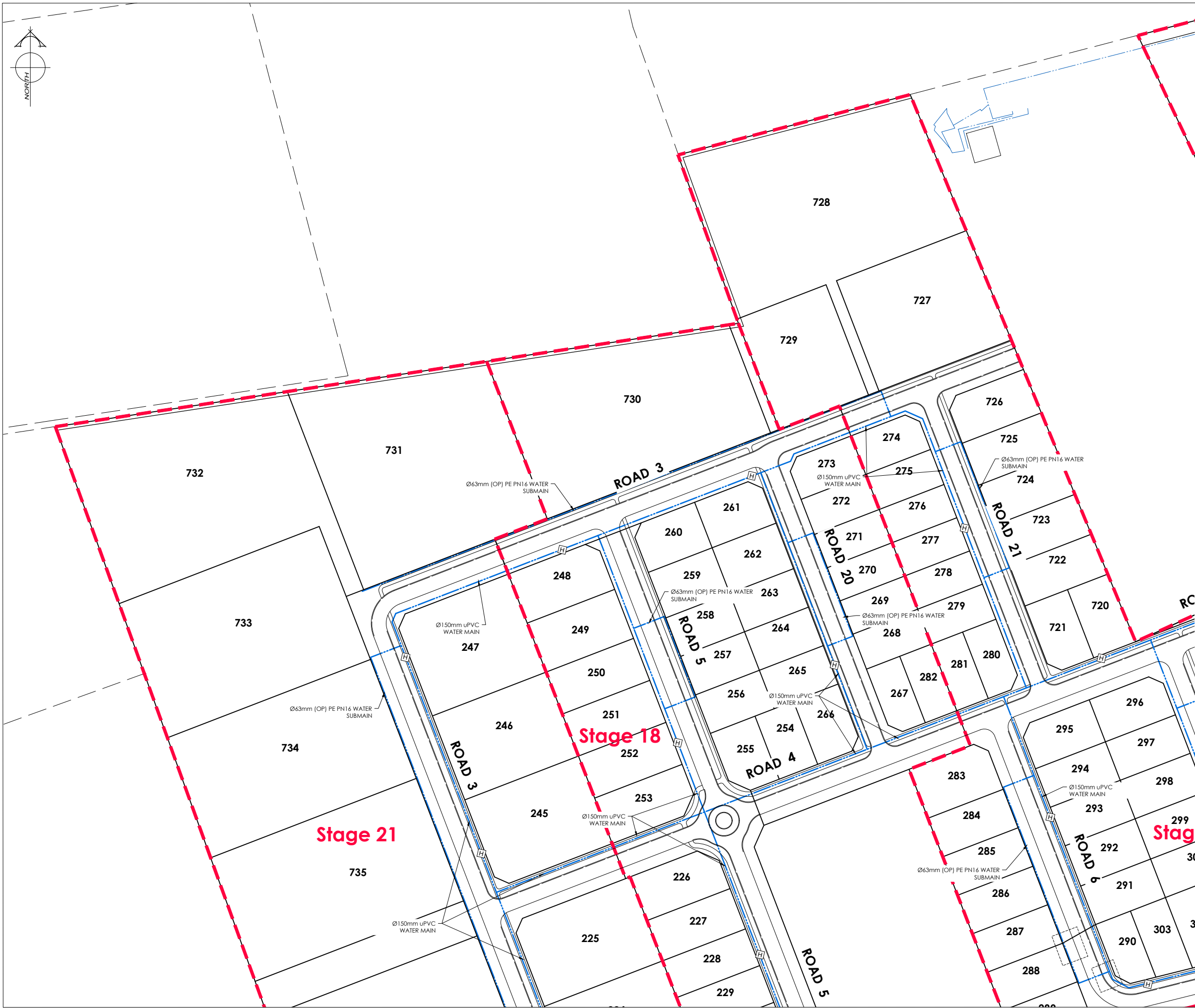
H21112

SHEET No :

17 OF 31

REVISION :

R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

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LEGEND :

EXISTING SERVICES

PROPOSED SERVICES

WATER

Ø63mm (OP) PE PN16 WATER SUBMAIN

Ø150mm uPVC WATER MAIN

KERB

WATER

Ø63mm (OP) PE PN16 WATER SUBMAIN

Ø150mm uPVC WATER MAIN

KERB

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

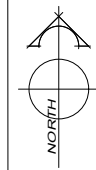
SHEET TITLE:
Engineering Concept Water Plan

DRAWING STATUS:
For Concept Purposes

SCALE : 1:1000@A1 1:2000@A3 DATE : July 2026

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DRAWING No : H21112 SHEET No: 18 OF 31 REVISION : R6



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET
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AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

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LEGEND :

EXISTING SERVICES

PROPOSED SERVICES

WATER

WATER

KERB

KERB

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Water Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
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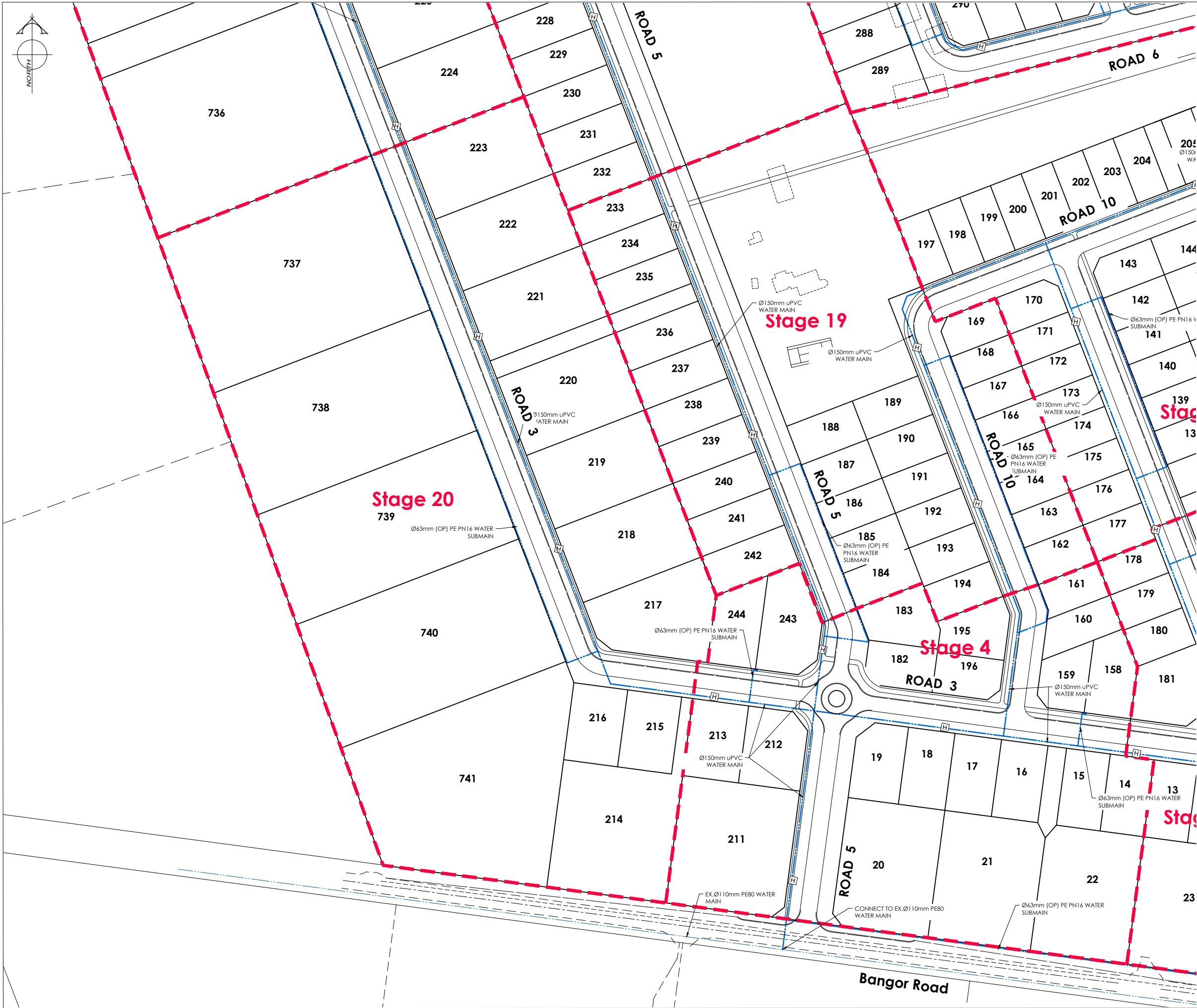
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DRAWN : DG

DRAWING No : H21112

SHEET No: 20 OF 31

REVISION : R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

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LEGEND :

EXISTING SERVICES

WATER

KERB

PROPOSED SERVICES

WATER

KERB

PLANNING SURVIVING ENGINEERING

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JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
Engineering Concept
Water Plan

DRAWING STATUS:
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SCALE: 1:1000@A1
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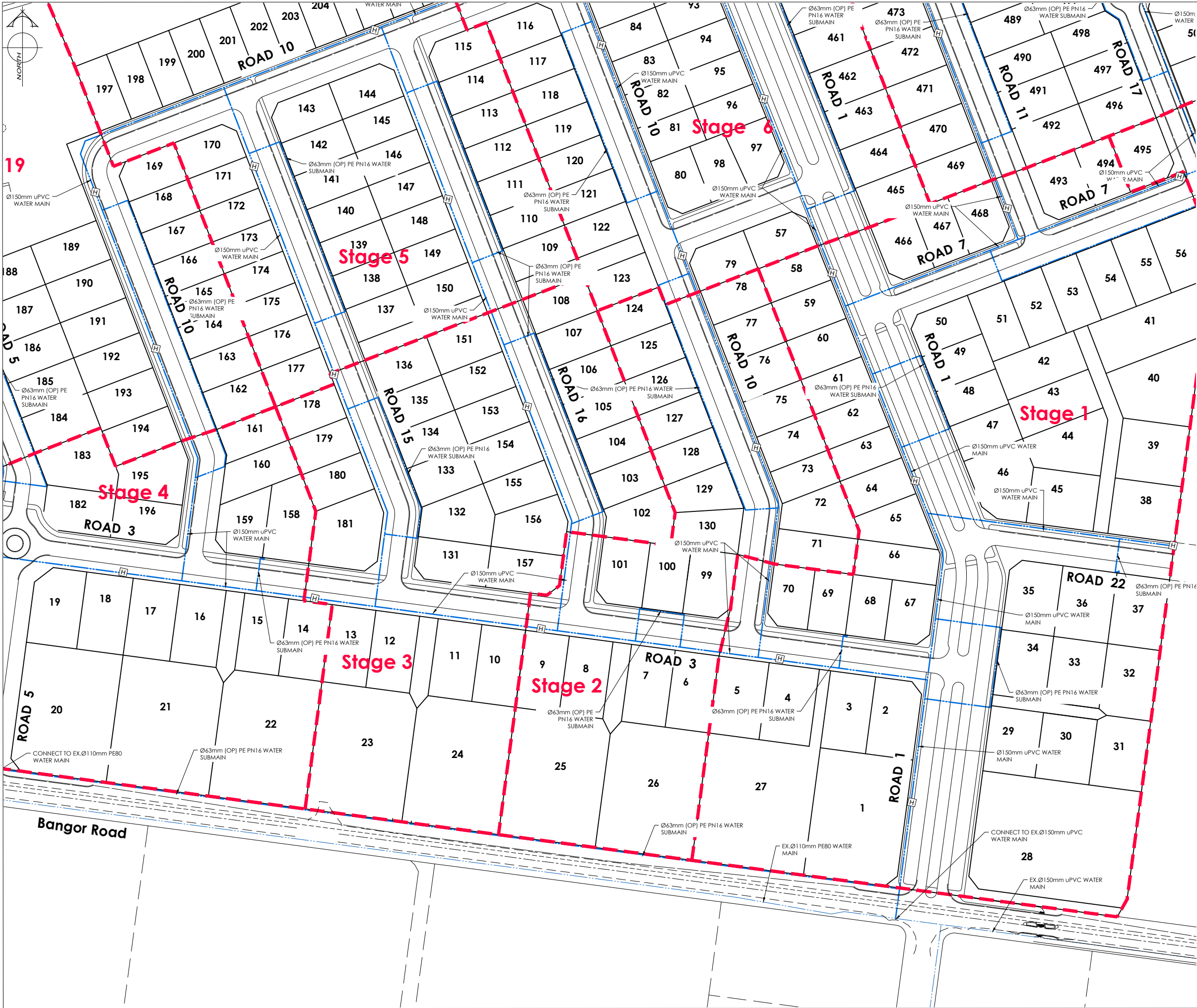
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DRAWN : DG

DRAWING No : H21112

SHEET No: 21 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

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LEGEND :

EXISTING SERVICES

WATER VALVE KERB

PROPOSED SERVICES

WATER VALVE METER CUT DOWN

DAVIE LOVELL-SMITH

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept Water Plan

DRAWING STATUS

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SCALE: 1:1000@A1 1:2000@A3

DATE: July 2026

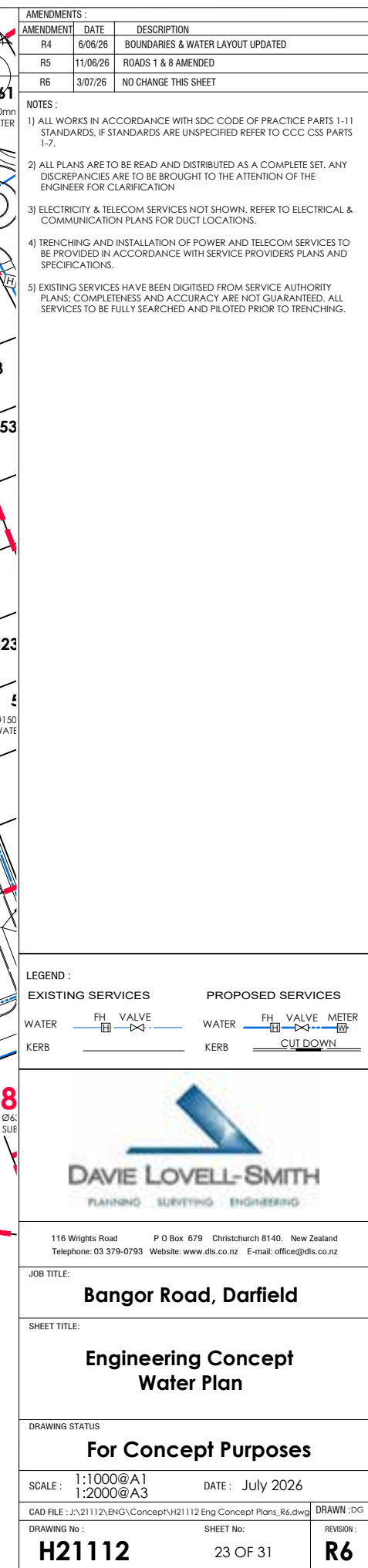
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DRAWN : DG

DRAWING No : H21112

SHEET No: 22 OF 31

REVISION : R6





AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

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2) ALL PLANS ARE TO BE READ AND DISTRIBUTED AS A COMPLETE SET, ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION

3) ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.

4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.

5) EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS; COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. ALL SERVICES TO BE FULLY SEARCHED AND PILOTTED PRIOR TO TRENCHING.

LEGEND :

EXISTING SERVICES

WATER

KERB

FH

VALVE

PROPOSED SERVICES

WATER

KERB

FH

VALVE

METER

CUT DOWN



DAVE LOVELL-SMITH
PLANNING · SURVEYING · ENGINEERING

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P O Box 679
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Christchurch 8140, New Zealand
E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Water Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: July 2026

CAD FILE : J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg

DRAWN : DG

DRAWING No : H21112

SHEET No: 24 OF 31

REVISION: R6



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

- 1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.
- 2) ALL PLANS ARE TO BE READ AND DISTRIBUTED AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION
- 3) ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.
- 4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.
- 5) EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS; COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. ALL SERVICES TO BE FULLY SEARCHED AND PILOTTED PRIOR TO TRENCHING.

LEGEND :	
FLUSHING POINT	FF
REDUCER	D
EXISTING SERVICES	PROPOSED SERVICES
PRESSURE SEWER	BEC
EXISTING SERVICES	PROPOSED SERVICES
KERB	CUT DOWN



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JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
**Engineering Concept
Pressure Sewer Plan**

DRAWING STATUS:
For Concept Purposes

SCALE: 1:1000@A1 DATE: July 2026
1:2000@A3

CAD FILE : J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg DRAWN : DG

DRAWING No : H21112 SHEET No: 25 OF 31 REVISION : R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

1) ALL WORKS IN ACCORDANCE WITH SDG CODE OF PRACTICE PARTS 1-11 STANDARDS. IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.

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LEGEND :

FLUSHING POINT

EXISTING SERVICES

PRESSURE SEWER

EXISTING SERVICES

KERB

REDUCER

PROPOSED SERVICES

PRESSURE SEWER

PROPOSED SERVICES

CUT DOWN

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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Pressure Sewer Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE: July 2026

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg

DRAWN: DG

DRAWING No: H21112

SHEET No: 26 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

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LEGEND :

FLUSHING POINT

REDUCER

EXISTING SERVICES

PROPOSED SERVICES

PRESSURE SEWER

PRESSURE SEWER

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Pressure Sewer Plan

DRAWING STATUS

For Concept Purposes

SCALE :

1:1000@A1
1:2000@A3

DATE : July 2026

CAD FILE :

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DRAWN : DG

DRAWING No :

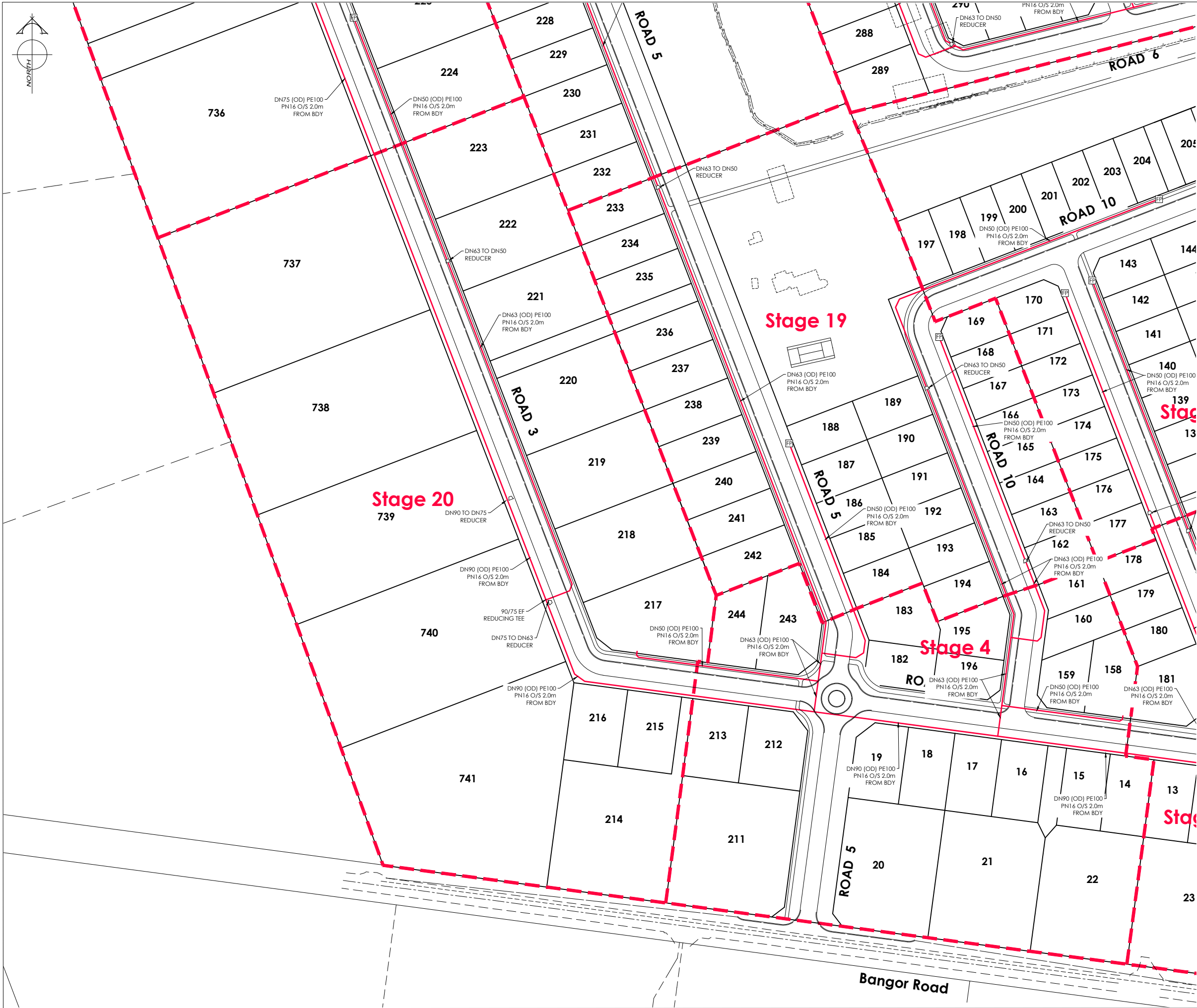
H21112

SHEET No:

27 OF 31

REVISION :

R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES :

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LEGEND :

FLUSHING POINT

REDUCER

EXISTING SERVICES

PROPOSED SERVICES

PRESSURE SEWER

PRESSURE SEWER

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB



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E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Pressure Sewer Plan

DRAWING STATUS

For Concept Purposes

SCALE:

1:1000@A1
1:2000@A3

DATE:

July 2026

CAD FILE:

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DRAWN:

DG

DRAWING No :

H21112

SHEET No:

28 OF 31

REVISION:

R6



INSET B
SCALE: 1:3000@A1
1:6000@A3

AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

NOTES:

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LEGEND:

FLUSHING POINT

REDUCER

EXISTING SERVICES

PROPOSED SERVICES

PRESSURE SEWER

PRESSURE SEWER

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB



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JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

Engineering Concept
Pressure Sewer Plan

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
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DATE: July 2026

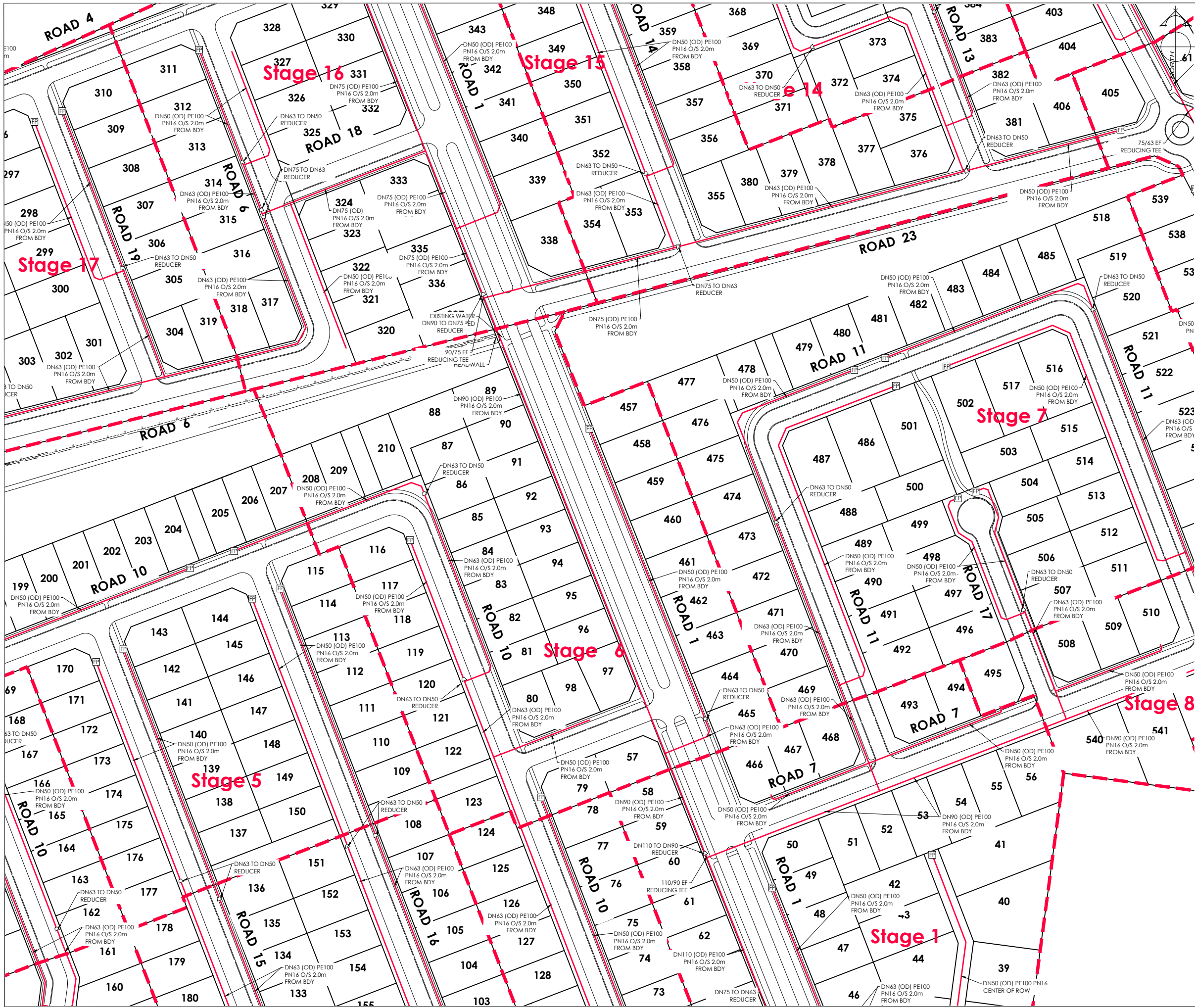
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DRAWN: DG

DRAWING No: H21112

SHEET No: 29 OF 31

REVISION: R6



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R4	6/06/26	BOUNDARIES & WATER LAYOUT UPDATED
R5	11/06/26	ROADS 1 & 8 AMENDED
R6	3/07/26	NO CHANGE THIS SHEET

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LEGEND :

FLUSHING POINT

REDUCER

EXISTING SERVICES

PROPOSED SERVICES

PRESSURE SEWER

PRESSURE SEWER

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

CUT DOWN

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
Engineering Concept
Pressure Sewer Plan

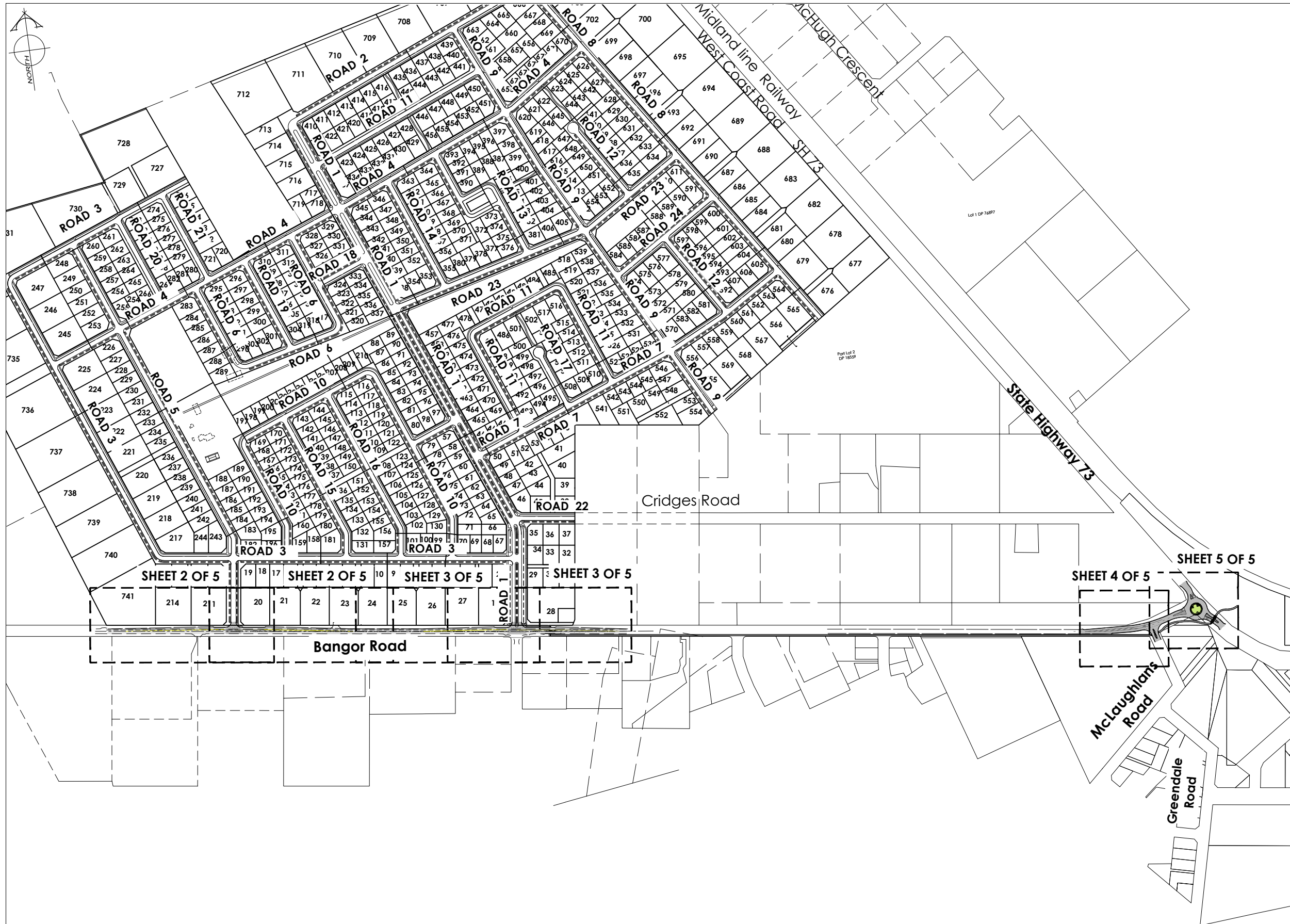
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For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3 DATE: July 2026

CAD FILE: J:\21112\ENG\Concept\H21112 Eng Concept Plans_R6.dwg DRAWN: DG

DRAWING No: H21112 SHEET No: 30 OF 31 REVISION: R6

APPENDIX D – Bangor Road Upgrade Concept Plans



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R1	7.07.26	NO CHANGE THIS SHEET

NOTES :

1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS. IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.

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HD

HUGHES DEVELOPMENTS

LEGEND :

STORMWATER SWALE

NEW ASPHALT PAVEMENT

CHIP SEAL

EXISTING SERVICES

EXISTING EDGE OF SEAL

KERB

NEW FOOTPATH

PROPOSED SERVICES

CUT DOWN

DAVE LOVELL-SMITH

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Christchurch 8140.

New Zealand

Telephone: 03 379-0793

Website: www.dls.co.nz

E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road Upgrade,

Darfield

SHEET TITLE:

Overall Plan

DRAWING STATUS

For Concept Purposes

SCALE :

1:3500@A1

1:7000@A3

DATE :

July 2026

CAD FILE :

J:\31112\ENG\Drawings\Bangor Road Upgrade\H2112_Bangor Rd Upgrade E01 D_R1.dwg

DRAWING No :

H21112

SHEET No :

1 of 5

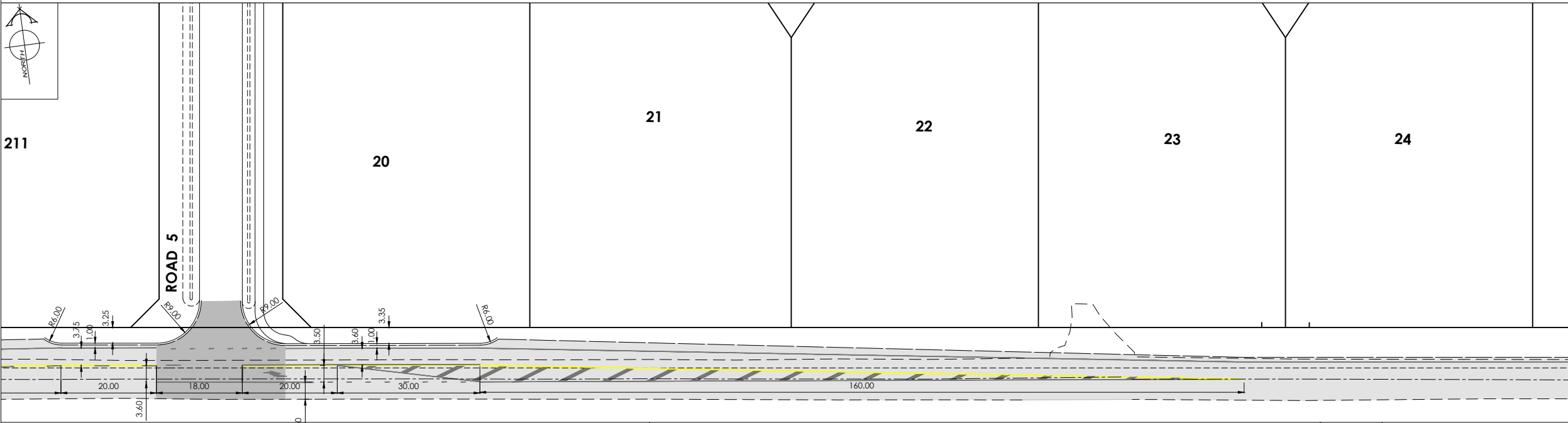
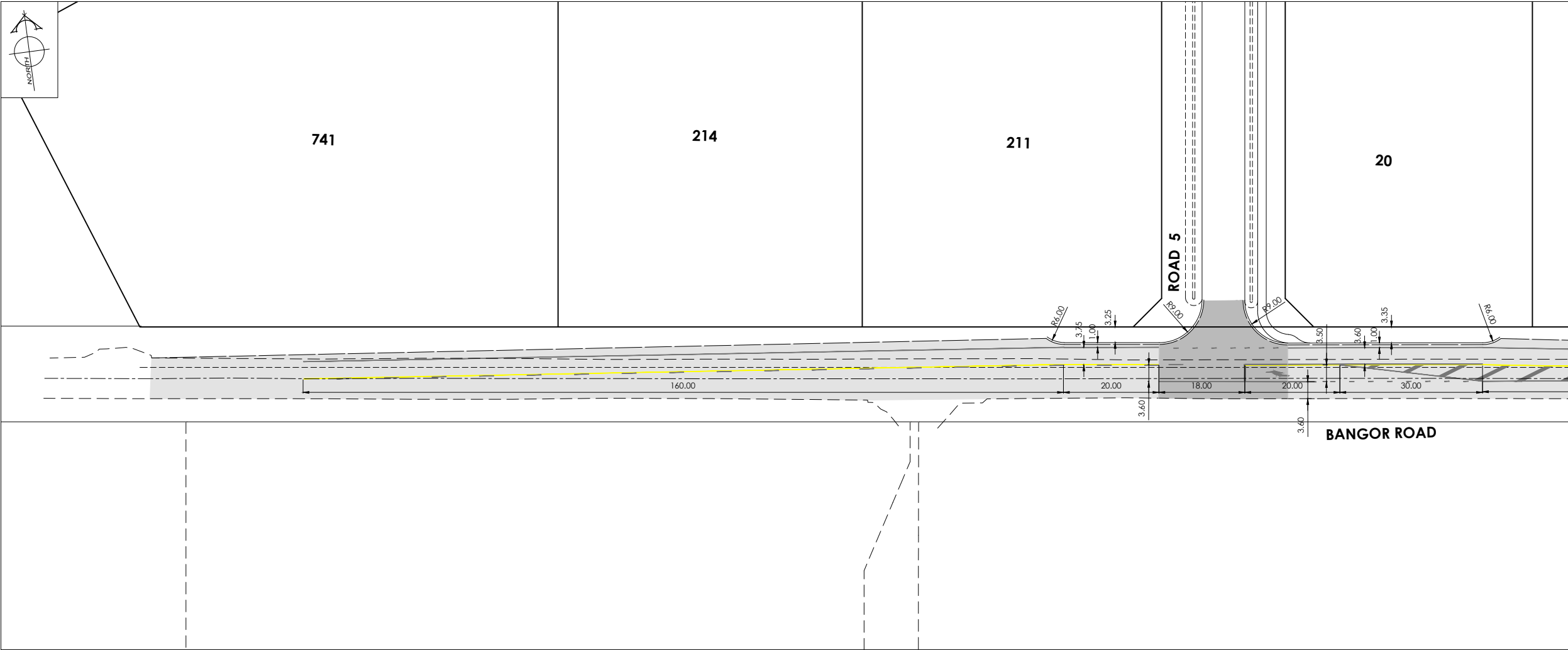
REVISION :

R1

DRAWN :

DG

PLAN SCHEDULE		
SHEET	DESCRIPTION	SCALE @ A1
1 of 5	Overall Plan	1:3500
2 of 5 - 3 of 5	Bangor Road Intersections Plan	1:500
4 of 5	McLaughlins Intersection	1:250
5 of 5	SH73 Roadabout	1:250



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R1	7.07.26	NO CHANGE THIS SHEET

- NOTES :
- ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.
 - ORIGIN OF LEVELS IS III DP 33396 (BCTN) STAINLESS STEEL PIN IN CONCRETE RL=73.074m. LOCATED IN THE BERM ON JOWERS ROAD.

LEVELS ARE IN TERMS OF NEW ZEALAND VERTICAL DATUM 2016.
 - METAL DEPTHS TO BE CONFIRMED OR INCREASED BY ENGINEER FOLLOWING CHECKING OF SUBGRADE CBR STRENGTH ONCE EXCAVATED.
 - ELECTRICITY & TELECOM SERVICES NOT SHOWN, REFER TO ELECTRICAL / TELECOM STREETLIGHT RETICULATION PLANS FOR RELEVANT DETAILS.
 - EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS; COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. ALL SERVICES TO BE FULLY SEARCHED & PILOTED PRIOR TO TRENCHING.
 - CARRIAGEWAY & FOOTPATH ACCEPTANCE TESTING IN ACCORDANCE WITH SDC CODE OF PRACTICE PART 8, CCC CSS PART 6 & CCC IDS.
 - FOOTPATH BASECOURSE TESTING - MINIMUM CLEGG HAMMER VALUE OF 25 REQUIRED FOR FOOTPATHS & RESIDENTIAL CROSSINGS. 35 FOR COMMERCIAL CROSSINGS.
 - KERB & CHANNEL BASECOURSE TESTING - MINIMUM DRY DENSITY OF 2100kg/m³ WITH 75% EQUAL OR EXCEEDING 2150kg/m³.
 - ROAD BASECOURSE TESTING - MAXIMUM BENKELMAN BEAM DEFLECTION OF 1.6mm WITH 95% OF RESULTS BELOW 2.0mm & 1.2mm FOR SH73.
 - AP65 SUB-BASE TESTING. MINIMUM DRY DENSITY 95% MDD ON EACH 150mm LIFT.
 - ALL AC FOOTPATHS TO CCC CSS SD607; SD608 CONCRETE.
 - DRAWINGS TO BE DISTRIBUTED AND READ AS A COMPLETE SET. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
 - TACTILE AND DIRECTIONAL PAVERS TO BE INSTALLED IN ACCORDANCE WITH RTS14. ICONS SHOWN ARE INDICATIVE ONLY.
 - STREET LIGHT LOCATIONS TO BE CONFIRMED.



LEGEND :	
	STORMWATER SWALE
	NEW ASPHALT PAVEMENT
	NEW FOOTPATH
	CHIP SEAL
EXISTING SERVICES	
EXISTING EDGE OF SEAL	
KERB	-----
PROPOSED SERVICES	
KERB	----- CUT DOWN



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JOB TITLE:
**Bangor Road Intersection,
Darfield**

SHEET TITLE:
Roading Layout

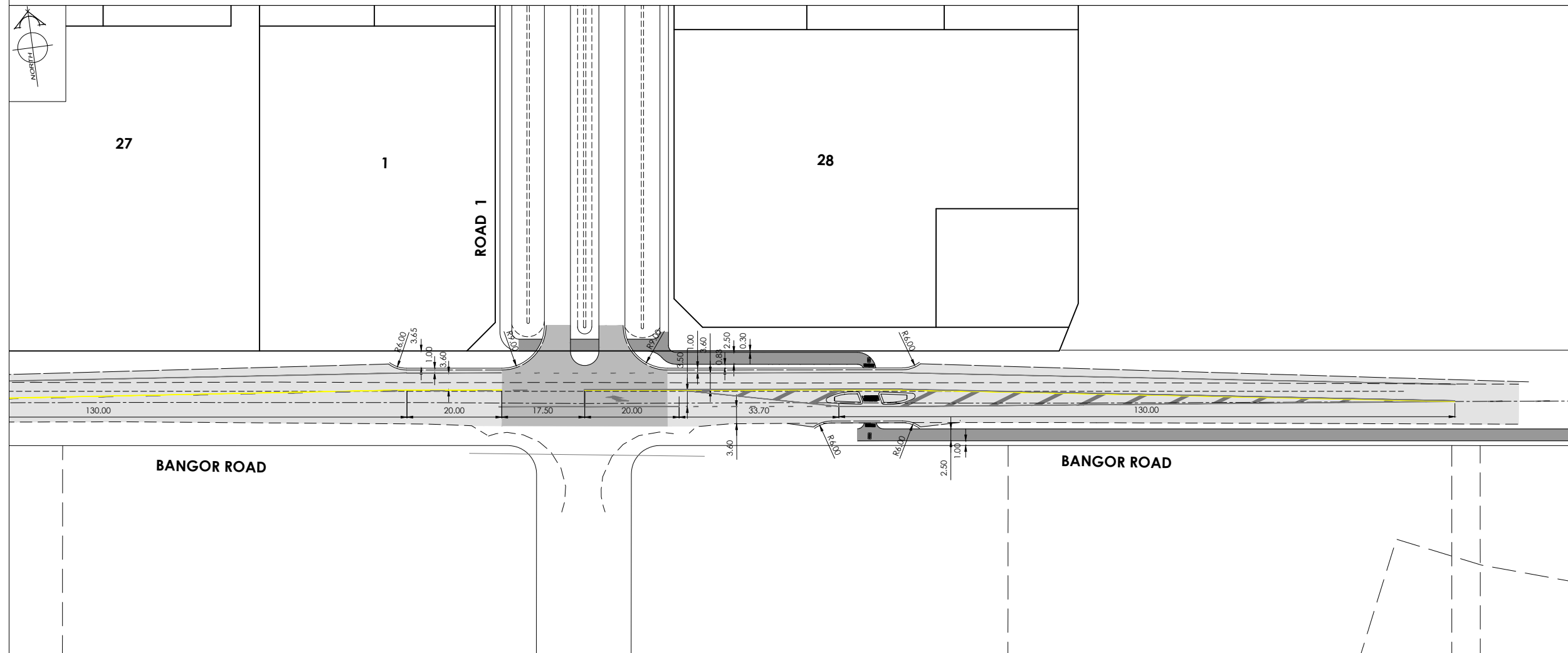
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For Concept Purposes

SCALE : 1:500@A1
1:1000@A3
DATE : July 2026

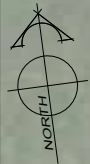
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DRAWING No :	SHEET No :	REVISION :
H21112	2 of 5	R1

DRAWN : DG



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R1	7.07.26	NO CHANGE THIS SHEET
NOTES :		
1. ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.		
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3. METAL DEPTHS TO BE CONFIRMED OR INCREASED BY ENGINEER FOLLOWING CHECKING OF SUBGRADE CBR STRENGTH ONCE EXCAVATED.		
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14. STREET LIGHT LOCATIONS TO BE CONFIRMED.		
HUGHES DEVELOPMENTS		
LEGEND :		
 STORMWATER SWALE  NEW ASPHALT PAVEMENT  NEW FOOTPATH  CHIP SEAL  PROPOSED SERVICES EXISTING SERVICES PROPOSED SERVICES EXISTING EDGE OF SEAL ----- ----- CUT DOWN KERB _____ KERB =====		
 DAVE LOVELL-SMITH PLANNING SURVEYING ENGINEERING		
116 Wrights Road P O Box 679 Christchurch 8140, New Zealand Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz		
JOB TITLE:		
Bangor Road Intersection, Darfield		
SHEET TITLE:		
Roading Layout		
DRAWING STATUS		
For Concept Purposes		
SCALE : 1:500@A1 1:1000@A3		
DATE : July 2026		
CAD FILE : J:\21112\H2112\Drawings\Bangor Road Upgrade\H2112_Bangor Rd Upgrade EDI_C_R1.dwg	DRAWN : DG	
DRAWING NO : H21112	SHEET No: 3 of 5	REVISION : R1



AMENDMENTS :		
AMENDMENT	DATE	DESCRIPTION
R1	7.07.26	SHEET ADDED
NOTES :		
1) ALL WORKS IN ACCORDANCE WITH SDC CODE OF PRACTICE PARTS 1-11 STANDARDS, IF STANDARDS ARE UNSPECIFIED REFER TO CCC CSS PARTS 1-7.		
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LEGEND :

AC SURFACING	NEW FOOTPATH	
EXPOSED AGGREGATE	COLORLED CONCRETE	
COBBLES	LANDSCAPING	
EXISTING SERVICES	PROPOSED SERVICES	
KERB	CUT DOWN	

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JOB TITLE:

**McLaughlins Intersection
Concept Layout**

SHEET TITLE:

Roading Layout

DRAWING STATUS

For Concept Purposes

SCALE : 1:250@A1
1:500@A3

DATE : July 2026

CAD FILE : J:\21112\DWG\Drawings\Bangor Road Upgrade\H21112_Bangor Rd Upgrade E01_0_R1.dwg

DRAWING No : **H21112**

SHEET No : 4 OF 5

REVISION : **R1**

DRAWN : DG



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION
R1	7.07.26	SHEET ADDED

NOTES :

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3) ELECTRICITY & TELECOM SERVICES NOT SHOWN. REFER TO ELECTRICAL & COMMUNICATION PLANS FOR DUCT LOCATIONS.

4) TRENCHING AND INSTALLATION OF POWER AND TELECOM SERVICES TO BE PROVIDED IN ACCORDANCE WITH SERVICE PROVIDERS PLANS AND SPECIFICATIONS.

5) EXISTING SERVICES HAVE BEEN DIGITISED FROM SERVICE AUTHORITY PLANS; COMPLETENESS AND ACCURACY ARE NOT GUARANTEED, ALL SERVICES TO BE FULLY SEARCHED AND PILOTTED PRIOR TO TRENCHING.

LEGEND :

AC SURFACING

EXPOSED AGGREGATE

COBBLES

EXISTING SERVICES

KERB

NEW FOOTPATH

COLORLED CONCRETE

LANDSCAPING

PROPOSED SERVICES

CUT DOWN

DAVE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

116 Wrights Road

P O Box 679 Christchurch 8140. New Zealand

Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

SH73 Roundabout
Concept Layout

SHEET TITLE:

Roading Layout

DRAWING STATUS

For Concept Purposes

SCALE: 1:250@A1
1:500@A3

DATE: July 2026

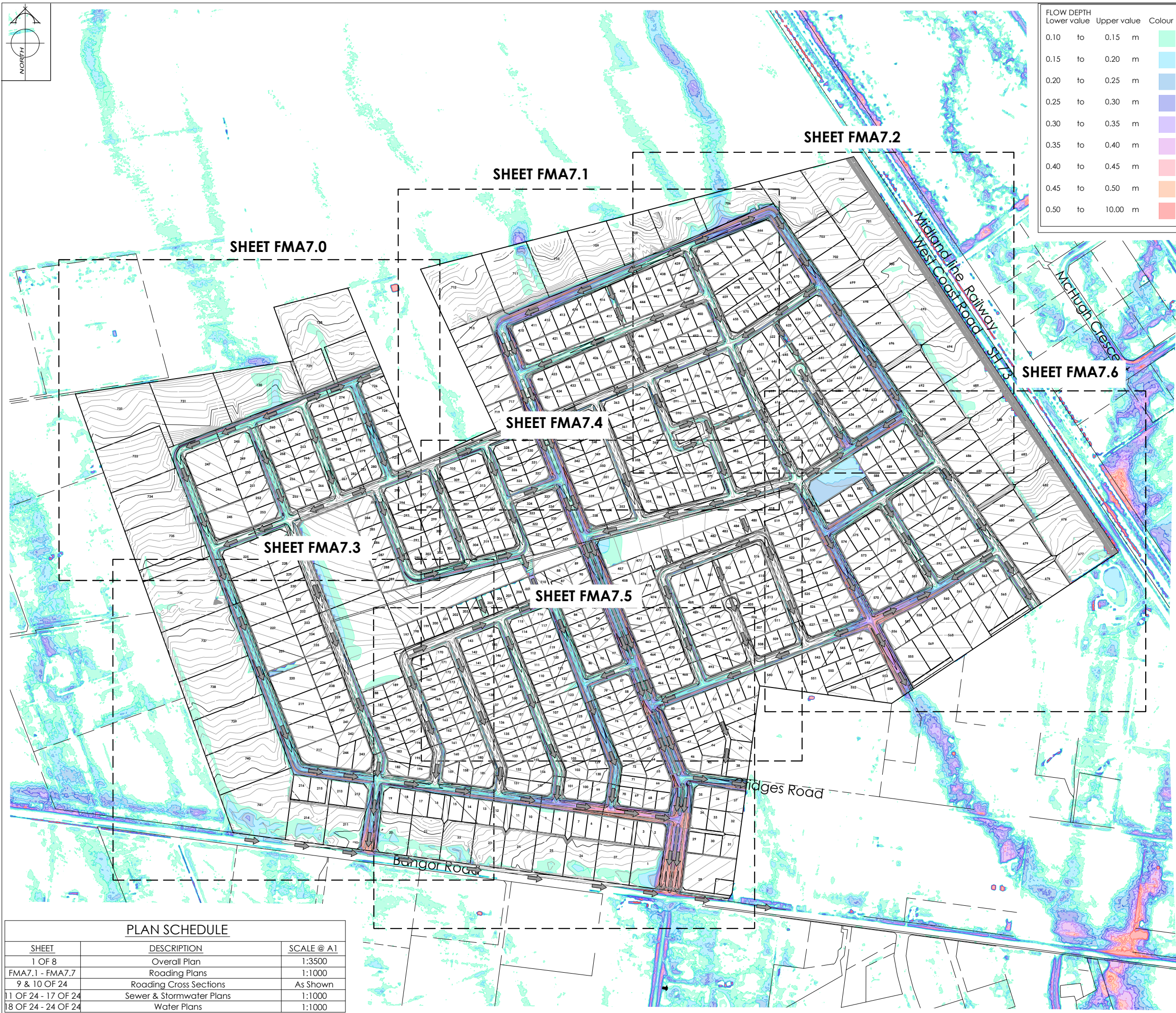
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DRAWING No: H21112

SHEET No: 5 OF 5

REVISION: R1

APPENDIX E – Conceptual Flood Mapping 0.5% AEP



FLOW DEPTH				Colour
Lower value	to	Upper value	m	
0.10	to	0.15	m	
0.15	to	0.20	m	
0.20	to	0.25	m	
0.25	to	0.30	m	
0.30	to	0.35	m	
0.35	to	0.40	m	
0.40	to	0.45	m	
0.45	to	0.50	m	
0.50	to	10.00	m	

AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION

NOTES:

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ORIGIN OF LEVELS.

LEVELS ARE IN TERMS OF NZVD 2016.

THIS FLOOD ANALYSIS HAS BEEN COMPLETED USING THE 2D ROADFLOW SURFACE FLOW MODULE IN THE 12D DESIGN SOFTWARE. 2D ROADFLOW IS BASED ON RAIN ON GRID ANALYSIS AND ALLOWS MODELLING OF COMBINED DRAINAGE NETWORK FLOWS AND SURFACE FLOWS.

PARAMETERS HAVE BEEN SET IN ACCORDANCE WITH WATERWAY, WETLANDS, AND DRAINAGE GUIDE (WWDG) 21-4, ADVANCED ANALYSIS.

THE INPUTS REQUIRED FOR THIS PROGRAMME ARE:

MANNING'S N VALUE (WWDG TABLE 22-1)
RAINFALL INTENSITY (HIRDS V4)
DESIGN & ASBUILT SURFACE MODEL (12D TIN)
DESIGN STORMWATER NETWORK (12D DESIGN)
INFILTRATION RATES (WWDG TABLE 21-10)
PONDING DEPTHS (WWDG TABLE 21-7)

USING THESE INPUTS, THE ANALYSIS SOFTWARE CREATES A SURFACE OF SQUARE CELLS (GRID TIN) THAT HAVE A DEPTH AND SLOPE. THIS ALLOWS FOR FLOW TO PASS TO ADJACENT LOWER CELLS. THE DRAINAGE NETWORK IS HYDRAULICALLY LINKED TO THE GRID TIN ALLOWING SURCHARGING OF THE PIPED NETWORK IN ADDITION TO FLOW THROUGH THE SURFACE CELLS.

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-PONDING IN PERVIOUS AREAS HAS BEEN SET AT 5MM AND IN IMPERVIOUS AREAS 2.5MM AS DEFINED BY TABLE 21-7 IN THE WWDG.

ASBUILT CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEVELS ARE IN TERMS OF NZVD 2016

LEGEND:

SEC. FLOW DIRECTION OF FLOW

EXISTING SERVICES	PROPOSED SERVICES
KERB	KERB
DESIGNED BY JALAY SHAH	SIGNED JALAY SHAH
CHECKED BY JAMIE VERSTAPPEN	DATE

DAVIE LOVELL-SMITH
PLANNING SURVEYING ENGINEERING

116 Wrights Road P.O. Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

**50 Mins 200 Years
Flood Modelling & Water Levels**

DRAWING STATUS

For Concept Purposes

SCALE: 1:3000@A1
1:6000@A3

DATE: June 2026

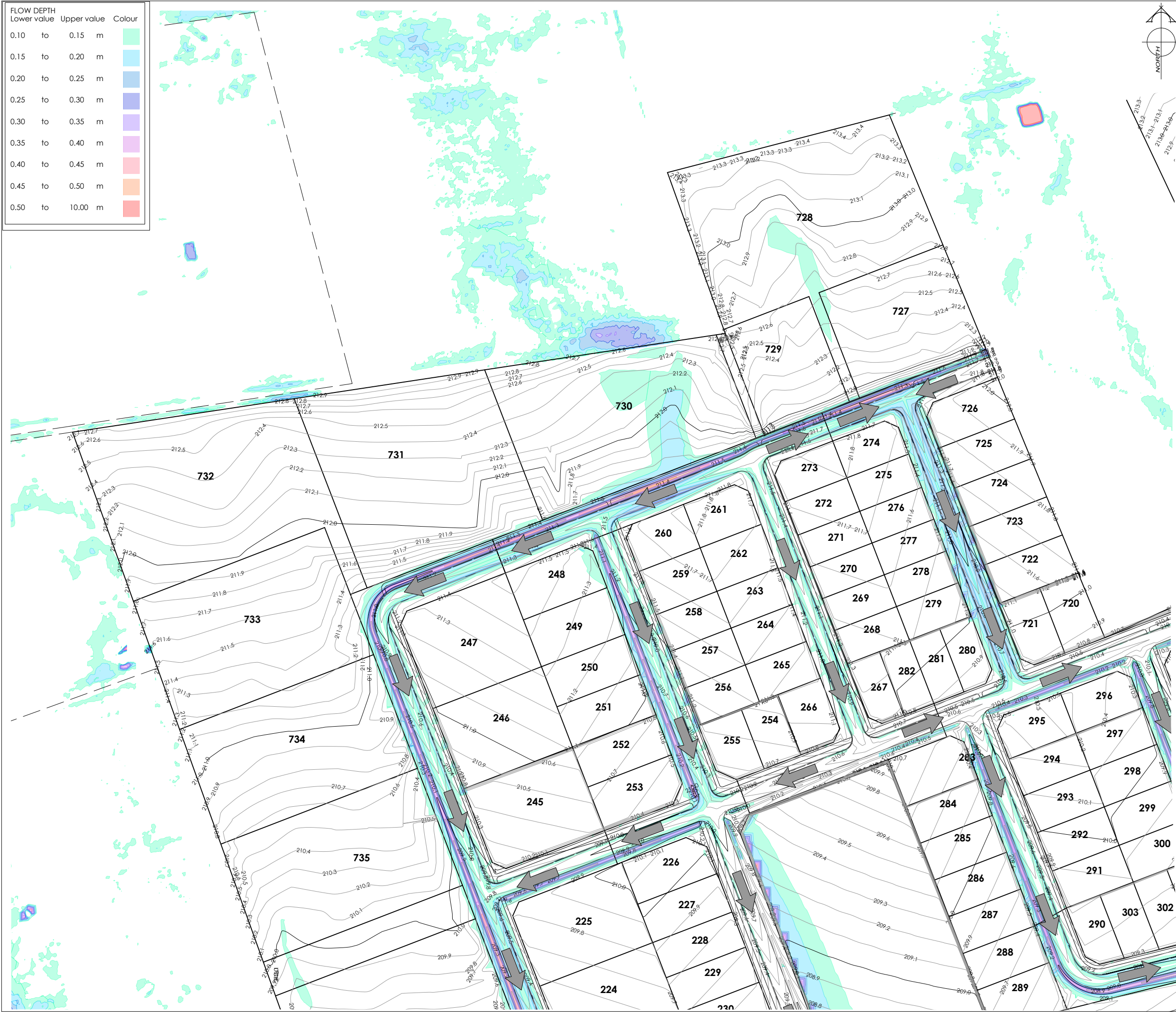
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DRAWING No: H21112 SHEET No: FMA7.0

DRAWN: JS REVISION: R1

PLAN SCHEDULE		
SHEET	DESCRIPTION	SCALE @ A1
1 OF 8	Overall Plan	1:3500
FMA7.1 - FMA7.7	Roading Plans	1:1000
9 & 10 OF 24	Roading Cross Sections	As Shown
11 OF 24 - 17 OF 24	Sewer & Stormwater Plans	1:1000
18 OF 24 - 24 OF 24	Water Plans	1:1000

FLOW DEPTH			Colour
Lower value	Upper value		
0.10	to 0.15	m	
0.15	to 0.20	m	
0.20	to 0.25	m	
0.25	to 0.30	m	
0.30	to 0.35	m	
0.35	to 0.40	m	
0.40	to 0.45	m	
0.45	to 0.50	m	
0.50	to 10.00	m	



AMENDMENTS :

AMENDMENT	DATE	DESCRIPTION

NOTES :

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ASBUILT CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEVELS ARE IN TERMS OF NZVD 2016

LEGEND :

40.04

PROPOSED LOT LEVELS

WL40.72

50min 200 YEARS WATER LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

NAME	SIGNED	DATE
DESIGNED BY JALAY SHAH	JALAY SHAH	
CHECKED BY JAMIE VERSTAPPEN	JAMIE VERSTAPPEN	

DAVIE LOVELL-SMITH
PLANNING SURVEYING ENGINEERING

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

**50 Mins 200 Years
Flood Modelling & Water Levels**

DRAWING STATUS

For Concept Purposes

SCALE: 1:1000@A1
1:2000@A3

DATE : March 2026

CAD FILE: J:\21112\ENG\Drawings\Flood Management\FH21112_FMA_R1.dwg

DRAWING No : SHEET No:

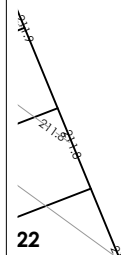
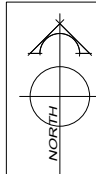
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REVISION :

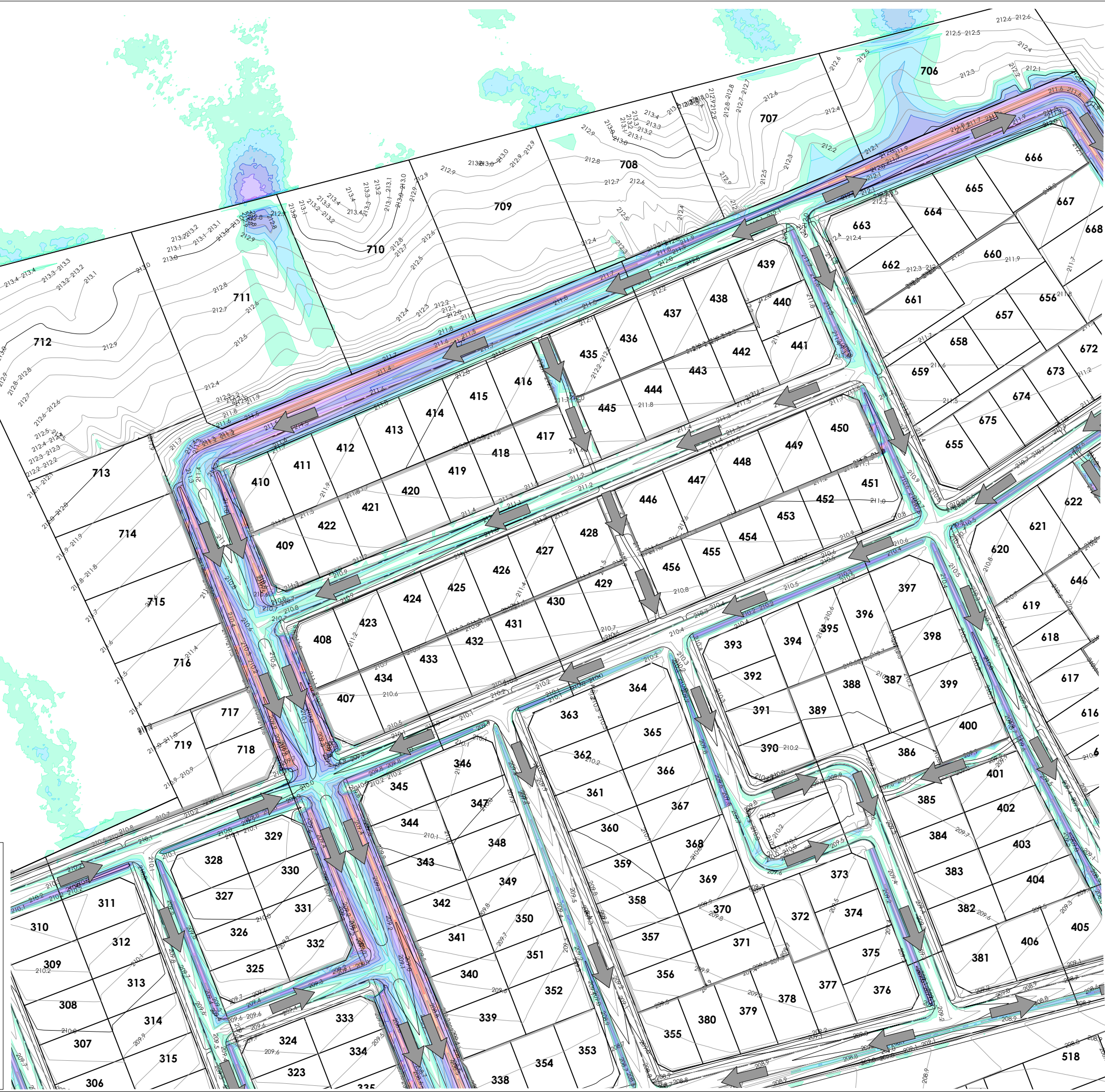
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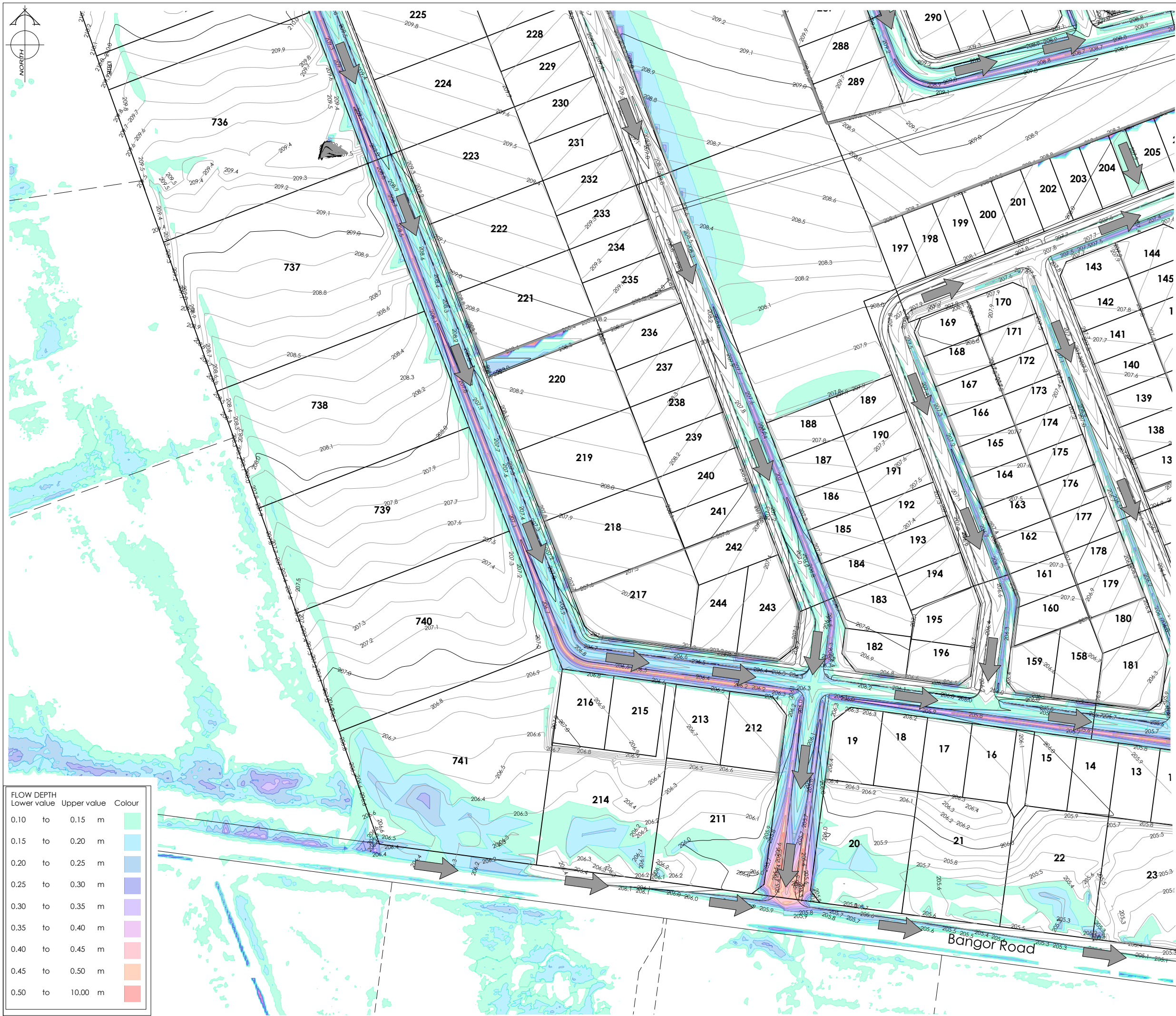
FMA7.1

R1



FLOW DEPTH			Colour
Lower value	Upper value		
0.10	to 0.15	m	
0.15	to 0.20	m	
0.20	to 0.25	m	
0.25	to 0.30	m	
0.30	to 0.35	m	
0.35	to 0.40	m	
0.40	to 0.45	m	
0.45	to 0.50	m	
0.50	to 10.00	m	





AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION

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ORIGIN OF LEVELS.

LEVELS ARE IN TERMS OF NZVD 2016.

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- RAINFALL INTENSITY (HIRDS V4)
- DESIGN & ASBUILT SURFACE MODEL (12D TIN)
- DESIGN STORMWATER NETWORK (12D DESIGN)
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ASBUILT CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEVELS ARE IN TERMS OF NZVD 2016

LEGEND:

40.04

PROPOSED LOT LEVELS

WL40.72

50min 200 YEARS WATER LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

	NAME	SIGNED	DATE
DESIGNED BY	JALAY SHAH	JALAY SHAH	
CHECKED BY	JAMIE VERSTAPPEN	JAMIE VERSTAPPEN	

DAVIE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

116 Wrights Road P O Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

50 Mins 200 Years
Flood Modelling & Water Levels

DRAWING STATUS

For Information

SCALE: 1:1000@A1
1:2000@A3

DATE: March 2026

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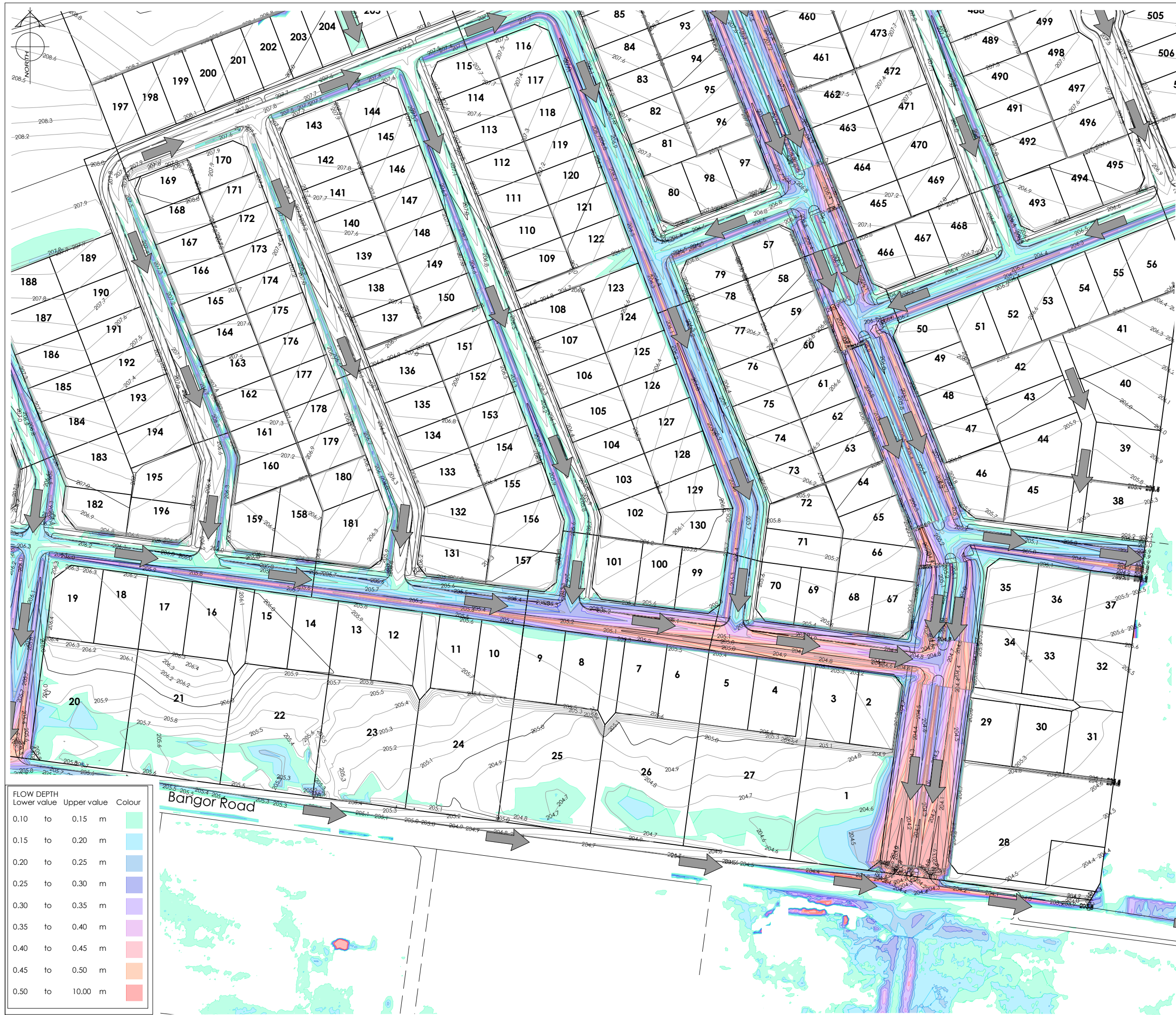
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DRAWN: JS REVISION:

H21112

FMA7.4

R1



AMENDMENTS:		
AMENDMENT	DATE	DESCRIPTION

NOTES :
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ASBUILT CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEVELS ARE IN TERMS OF NZVD 2016

LEGEND :			
	40.04	PROPOSED LOT LEVELS	
	WL40.72	50min 200 YEARS WATER LEVELS	
	SEC. FLOW	DIRECTION OF FLOW	
EXISTING SERVICES		PROPOSED SERVICES	
KERB		KERB	
DESIGNED BY	JALAY SHAH	SIGNED	JALAY SHAH
CHECKED BY	JAMIE VERSTAPPEN		



116 Wrights Road P.O. Box 679 Christchurch 8140. New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

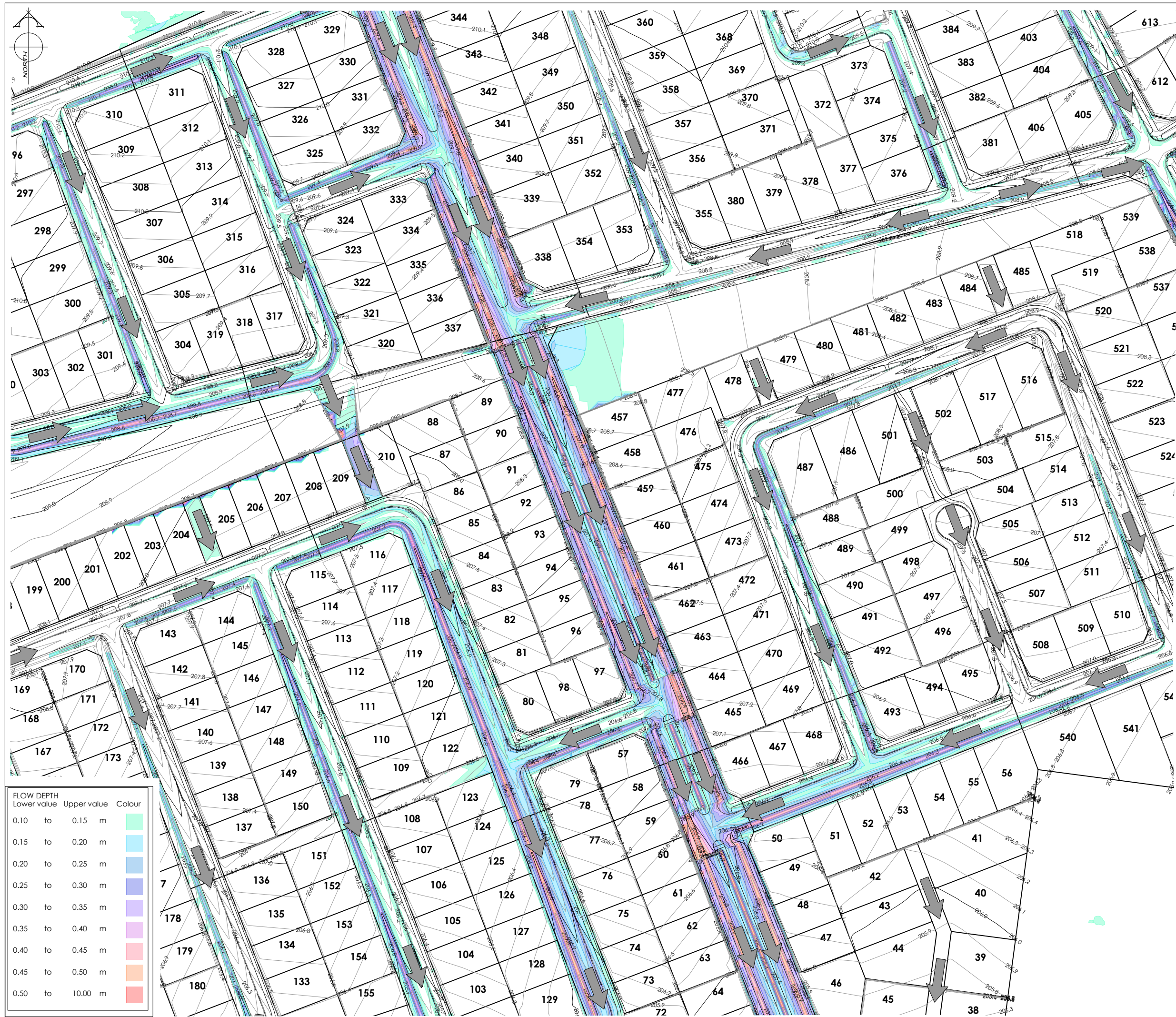
JOB TITLE:
Bangor Road, Darfield

SHEET TITLE:
**50 Mins 200 Years
Flood Modelling & Water Levels**

DRAWING STATUS
For Information

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DRAWING No:	SHEET No:		REVISION:
H21112	FMA7.5	R1	



FLOW DEPTH			Colour
Lower value	Upper value	m	
0.10	to	0.15	Light Green
0.15	to	0.20	
0.20	to	0.25	Light Blue
0.25	to	0.30	
0.30	to	0.35	Medium Blue
0.35	to	0.40	
0.40	to	0.45	Purple
0.45	to	0.50	
0.50	to	10.00	Red

AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION

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ORIGIN OF LEVELS:
EJBW (CC 370 NO 2)
LOCATED INTERSECTION OF RAILWAY ROAD, TWO CHAIN ROAD & JONES ROAD.
RL=57.837m.

LEVELS ARE IN TERMS OF NZVD 2016.

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LEVELS ARE IN TERMS OF NZVD 2016

LEGEND:

40.04

PROPOSED LOT LEVELS

WL40.72

50min 200 YEARS WATER LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

NAME	SIGNED	DATE
JALAY SHAH	JALAY SHAH	
JAMIE VERSTAPPEN	JAMIE VERSTAPPEN	



DAVIE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

116 Wrights Road P O Box 679 Christchurch 8140 New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

50 Mins 200 Years
Flood Modelling & Water Levels

DRAWING STATUS:

For Information

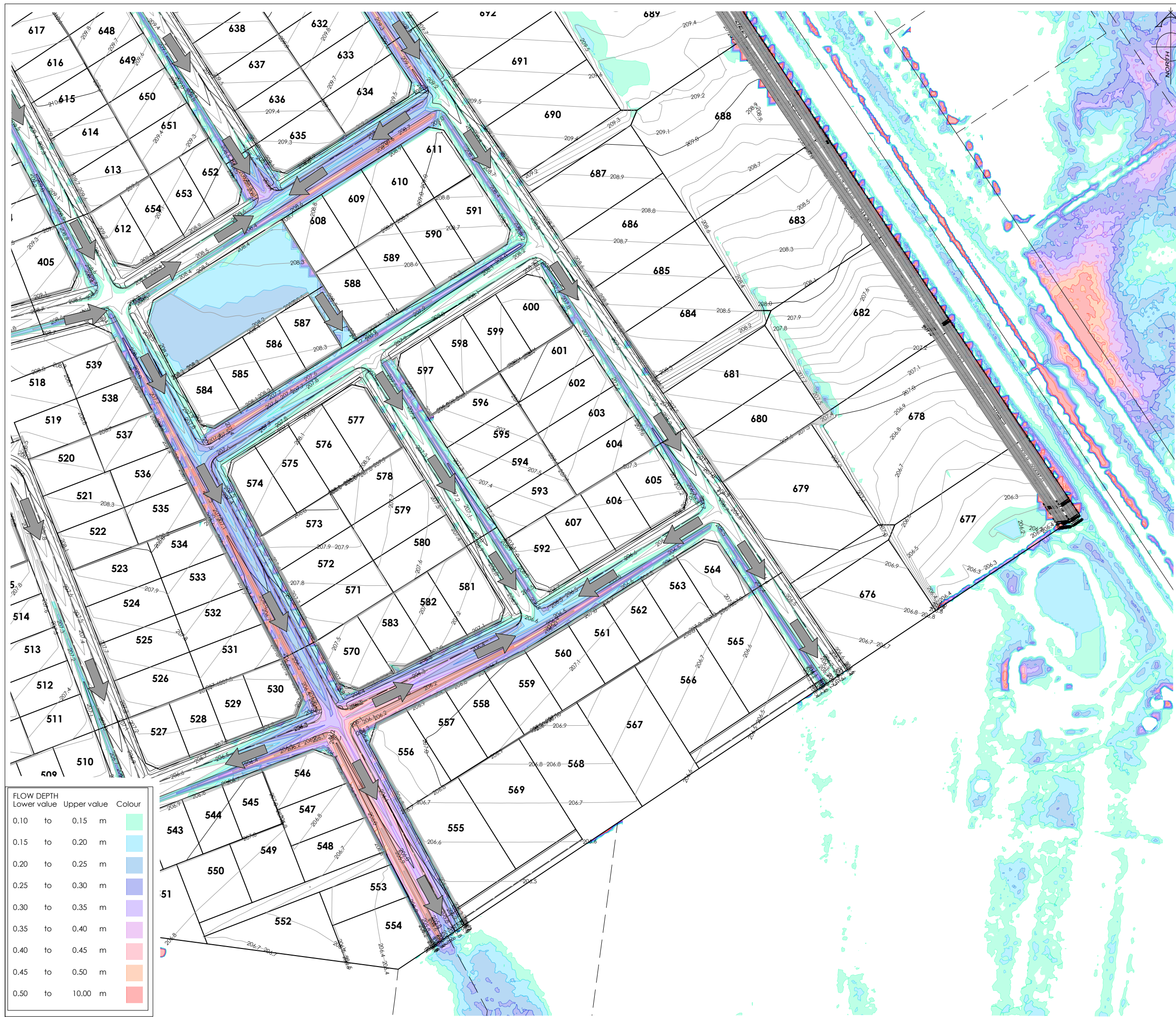
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DATE: March 2026

CAD FILE: P:\21112\ENG\Drawings\Flood Management\FH21112_FMA_R1.dwg

DRAWING No: SHEET No: DRAWN: JS

H21112 FMA7.6 R1



AMENDMENTS:

AMENDMENT	DATE	DESCRIPTION

NOTES:

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RL=57.837m.

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ASBUILT CONTOUR INTERVAL: MAJOR 1.0m MINOR 0.1m.

LEVELS ARE IN TERMS OF NZVD 2016

LEGEND:

40.04

PROPOSED LOT LEVELS

WL40.72

50min 200 YEARS WATER LEVELS

SEC. FLOW

DIRECTION OF FLOW

EXISTING SERVICES

PROPOSED SERVICES

KERB

KERB

NAME	SIGNED	DATE
DESIGNED BY JALAY SHAH	JALAY SHAH	
CHECKED BY JAMIE VERSTAPPEN	JAMIE VERSTAPPEN	

DAVIE LOVELL-SMITH

PLANNING SURVEYING ENGINEERING

116 Wrights Road

P.O. Box 679

Christchurch 8140, New Zealand

Telephone: 03 379-0793

Website: www.dls.co.nz

E-mail: office@dls.co.nz

JOB TITLE:

Bangor Road, Darfield

SHEET TITLE:

50 Mins 200 Years
Flood Modelling & Water Levels

DRAWING STATUS

For Information

SCALE: 1:1000@A1
1:2000@A3

DATE: March 2026

CAD FILE: P:\21112\ENG\Drawings\Flood Management\H21112_FMA_R1.dwg

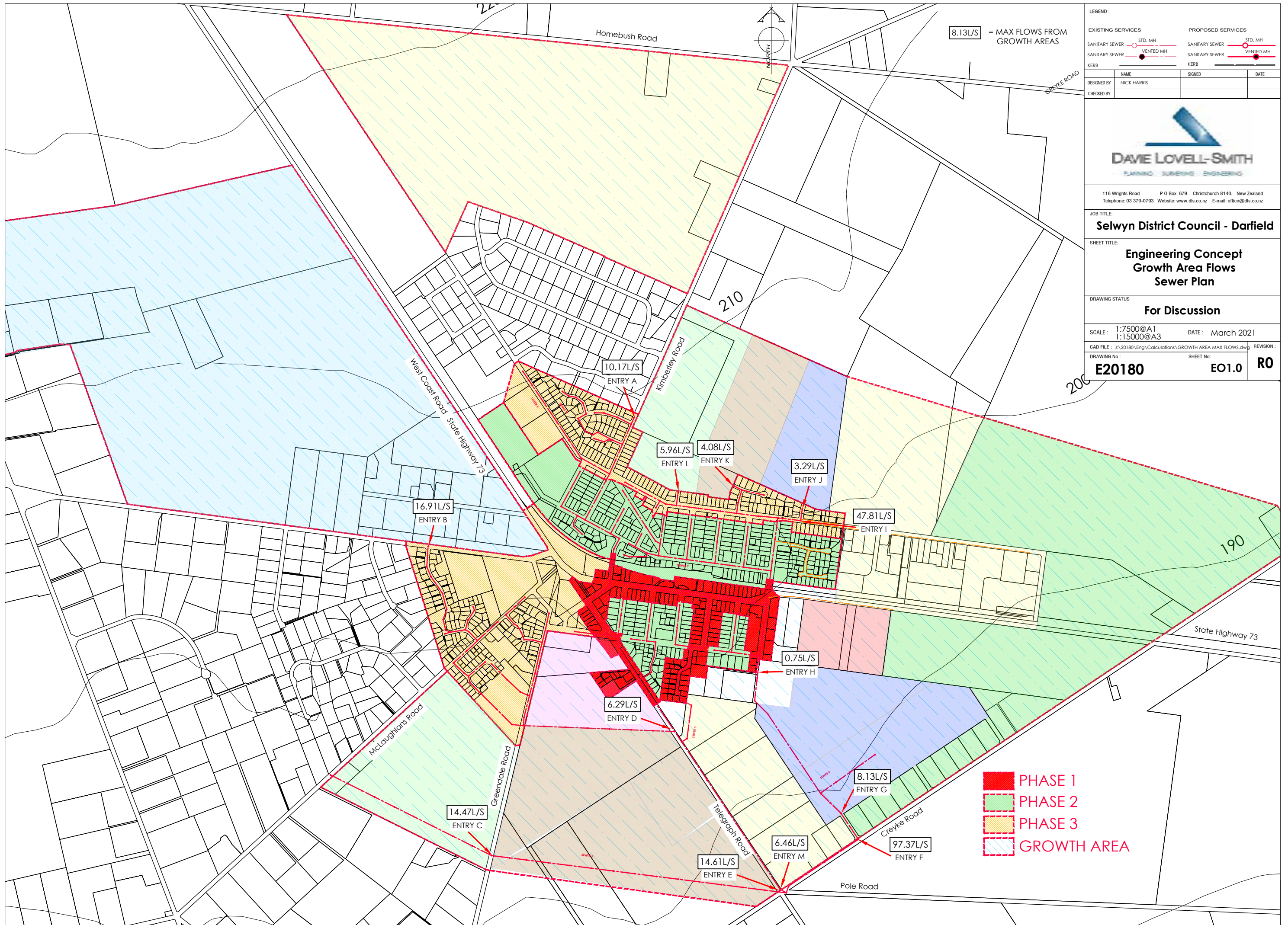
DRAWING No.: H21112

SHEET No.: FMA7.7

DRAWN: JS

REVISION: R1

APPENDIX F – Darfield Sewer Catchment Plan



LEGEND :

EXISTING SERVICES		PROPOSED SERVICES	
SANITARY SEWER	STD. MH	SANITARY SEWER	STD. MH
SANITARY SEWER	VENTED MH	SANITARY SEWER	VENTED MH
KERB		KERB	

DESIGNED BY	NAME	SIGNED	DATE
NICK HARRIS			

CHECKED BY	NAME	SIGNED	DATE

DAVE LOVELL-SMITH
PLANNING SURVEYING ENGINEERING

116 Wrights Road P.O. Box 679 Christchurch 8140, New Zealand
Telephone: 03 379-0793 Website: www.dls.co.nz E-mail: office@dls.co.nz

JOB TITLE:
Selwyn District Council - Darfield

SHEET TITLE:
**Engineering Concept
Growth Area Flows
Sewer Plan**

DRAWING STATUS:
For Discussion

SCALE: 1:7500@A1
1:15000@A3 DATE: March 2021

CAD FILE: J:\20180\Eng\Calculations\GROWTH AREA MAX FLOWS.dwg REVISION:

DRAWING No:	SHEET No:	REVISION:
E20180	EO1.0	R0

APPENDIX G – Orion Capacity Letter

25-Sept-2023

Jamie Verstappen
Davie Lovell-Smith
116 Wrights Road
Christchurch

Dear Sir,

Proposed subdivision –160 Bangor Road Darfield 7304831.

I refer to your email/letter and your request for a letter to confirm there is capacity on the Orion network to service the electrical needs of your proposed subdivision. This letter is not suitable for 224 clearance purposes.

I confirm:

1. Orion has the capacity on the network to meet your request.
2. There are no specific connections available for this subdivision however:
 - a. A connection can be made available for 180 rural residential lots with future total 500 lots subject to alteration to the Orion network; and
 - b. It is likely Orion will need to either upgrade existing network or lay new cables to create these 180 connections and for the intensification to 500 lots will require significant upstream reinforcement and a suitable time frame. We recommend the developer engages an authorised Orion subdivision designer to help you through this process and submit a suitable design proposal so that your development may connect to the Orion network.
 - c. There will be costs associated in providing the connection(s). The costs payable will be in accordance with the Orion *[extensions and connections or subdivision]* policy and will be the responsibility of the property owner.
 - d. The next step will be to engage an authorised Orion subdivision designer.
3. Orion will request an easement in gross for all over boundary existing network not currently secured by way of easement at the developers cost prior to the issuing 224 clearance.
4. To comply with Orion's network security conditions an alternative feed from adjoining developments may also be required.

5. All proposed new structures near or under existing overhead lines (eg house, sheds, carports, garages or any other structures) must comply with the distances stated in the New Zealand Electrical Code of Practice for Electrical Safe Distances 2001 (NZECP34:2001).
6. **IMPORTANT:** This Capacity Letter will expire upon the earlier of the date upon which a connection for each of the lots for the development has been approved and lived in or 6 months from the date of this letter in the case of a residential/rural subdivisions or, 12 months in the case of a commercial/industrial subdivision.

All terms and conditions will be subject to current Orion policies and practices.

Please don't hesitate to contact the writer should you have any questions.

Yours faithfully



Paul Golding
Contract Manager (Connections)



APPENDIX H – Chorus Capacity Letter

Chorus NZ Ltd
4 Graham Street
Auckland CBD
Auckland

Jamie Verstappen
Davie Lovell- Smith
116 Wrights Road,
Addington
CHRISTCHURCH

2nd October 2025

Hi Jamie,

Thank you for providing an indication of your development plans in the Darfield area. I can confirm that we have infrastructure in the general land area that you are proposing to develop at Bangor Road, Darfield.

Chorus will be able to extend our network to provide connection availability. However, please note that this undertaking would of course be subject to Chorus understanding the final total property connections that we would be providing, roll-out of property releases/dates and what investment may or may not be required from yourselves and

Chorus to deliver the infrastructure to and throughout the site in as seamless and practical way as possible.

The cost can only be finalised at the time that you are ready to proceed.

Chorus is happy to work with you on this project as the network infrastructure provider of choice. What this ultimately means is that the end customers (business and homeowners) will have their choice of any retail service providers to take their end use services from once we work with you to provide the physical infrastructure.

Please reapply with a detailed site plan once you are ready to proceed.

Kind Regards,

Margaret Singh
Group Account Manager
Chorus NZ Ltd

[REDACTED]