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Issued via email: AndrewRi@fcc.co.nz

Dear Andrew

TRAFFIC IMPACT ASSESSMENT – PAKOWHAI PUMP STATION REPLACEMENT, HAWKES BAY

East Cape Consulting (ECC) has been engaged by Hawke's Bay Regional Council to prepare a Transportation Impact Assessment (TIA) for the proposed replacement Pakowhai Pump Station in Hawke's Bay.

The proposal is being progressed under the Severe Weather Emergency Recovery (Hawke's Bay Flood Protection Works) Order 2024¹ was established in 2024 to facilitate timely provision of works such as the pump station replacements, which are part of the response to damage caused by Cyclone Gabrielle in 2023.

Schedule 3 of the OiC identifies Matters of Control, including those relating to access and transport. In particular, this includes potential adverse effects on the safe and efficient operation of the transport network arising from the works, and measures to avoid, remedy, or mitigate those effects. This assessment considers the transport-related effects associated with the construction and operation of the proposed pump station and identifies appropriate management measures.

By way of summary, it is assessed that the surrounding road network is capable of accommodating the temporary construction traffic associated with the proposal. The transport effects are expected to be limited in duration and can be appropriately managed through the development and implementation of a Construction Traffic Management Plan (CTMP), including the management of site access, construction traffic routes, and temporary traffic management measures.

1. SITE LOCATION

The location of the Pakowhai Pump Station is shown on Figure 1 below. It sits between the Tutaekuri and Ngaruroro Rivers in the Hastings District.

¹ The Severe Weather Emergency Recovery Legislation (Hawke's Bay Flood Protection Works) Order 2024.





Figure 1 – Site Location (Base Map Source: Openstreetmaps)

The site and its surrounds are zoned Plains Production Zone (PPZ) by the Hastings District Council (HDC) District Plan.

The site is accessed via a private access road at the end of Sissons Road.

2. ROAD NETWORK

2.1 Road Hierarchy

Sissons Road is classified as a secondary collector road in the HDC road hierarchy. It meets Brookfields Road at a priority-controlled T-intersection. Brookfields Road and Pakowhai Road are both classified as arterial roads.

These roads form part of the primary transport network serving rural production, industrial and flood protection activities in this part of Hastings District. Pakowhai Road provides access north towards the Hawke's Bay Expressway (HEX) and south towards Hastings. The HDC District Plan road hierarchy context is shown as **Figure 2** below.

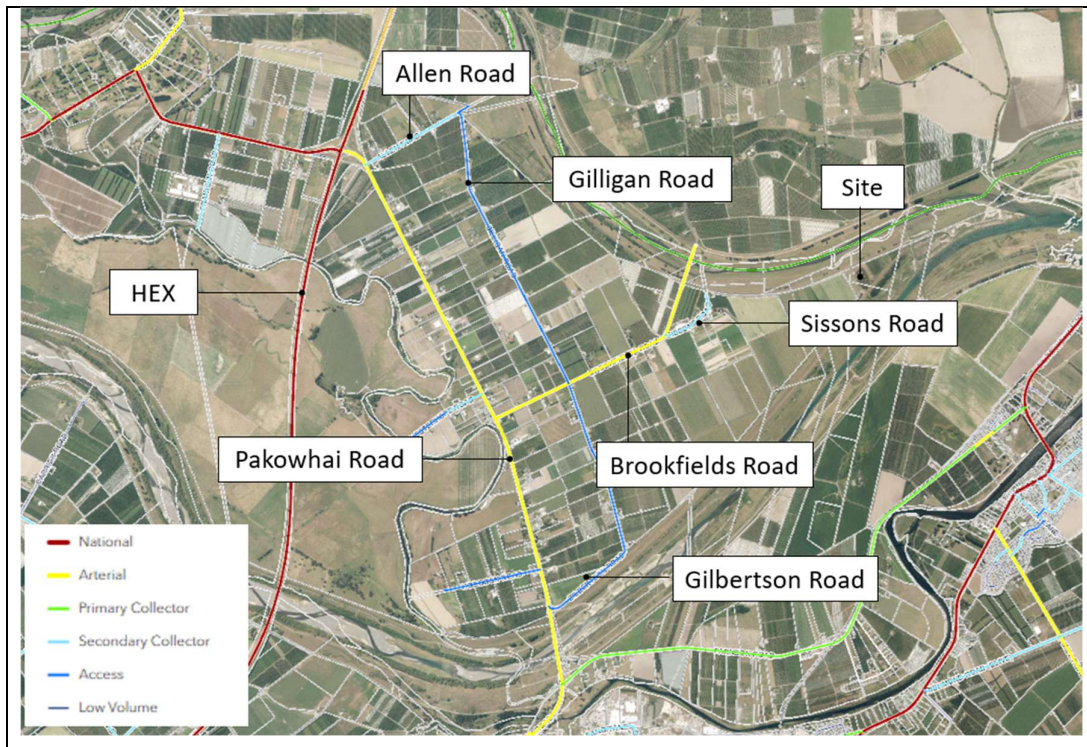


Figure 2 – Site Location in HDC Road Hierarchy

2.2 Road Layout and Site Access

Movement between the site and the arterial network is facilitated by Sissons Road, Brookfields Road and Pakowhai Road.

The Pakowhai Road/Brookfields Road intersection is a Give Way controlled T-intersection. There is a right turn bay provided on the Pakowhai Road approach from the south, integrated with the painted flush median. Shoulder widening is also provided on the Pakowhai Road approach from the north to support left turn movements into Brookfields Road. The intersection arrangement is shown as **Figure 3** below.



Figure 3 – Pakowhai Road/Brookfields Road Intersection (Aerial Source: HDC IntraMaps)

Brookfields Road operates with a posted speed limit of 80km/h. It has a two-way two-lane carriageway which is generally straight and flat and marked with a centreline and edge lines. Between Pakowhai Road and Gilbertson Road (approximately 600m) it has a sealed width of about 8m (3.5m wide lanes with 0.5m shoulders). Between Gilbertson Road and Sissons Road (approximately 840m) it has a sealed width of about 10m (3.0m wide lanes with 2.0m cycle lanes).

These different cross-sections are shown by Figure 4 below.



Figure 4 – Gilbertson Road/Brookfields Road Intersection

Brookfields Road turns north as it approaches Sissons Road and forms the major road of a Give Way controlled T-intersection. A curve advisory speed of 55 km/h applies around the bend and the on-road cycle lanes marked on both sides of Brookfields Road continue through the intersection.

The Sissons Road approach has guardrails on both sides and a solid island on the southern side to ensure Sissons Road drivers approach the corner at an appropriate angle rather than allow them to merge too quickly. The intersection is shown below as Figure 5.

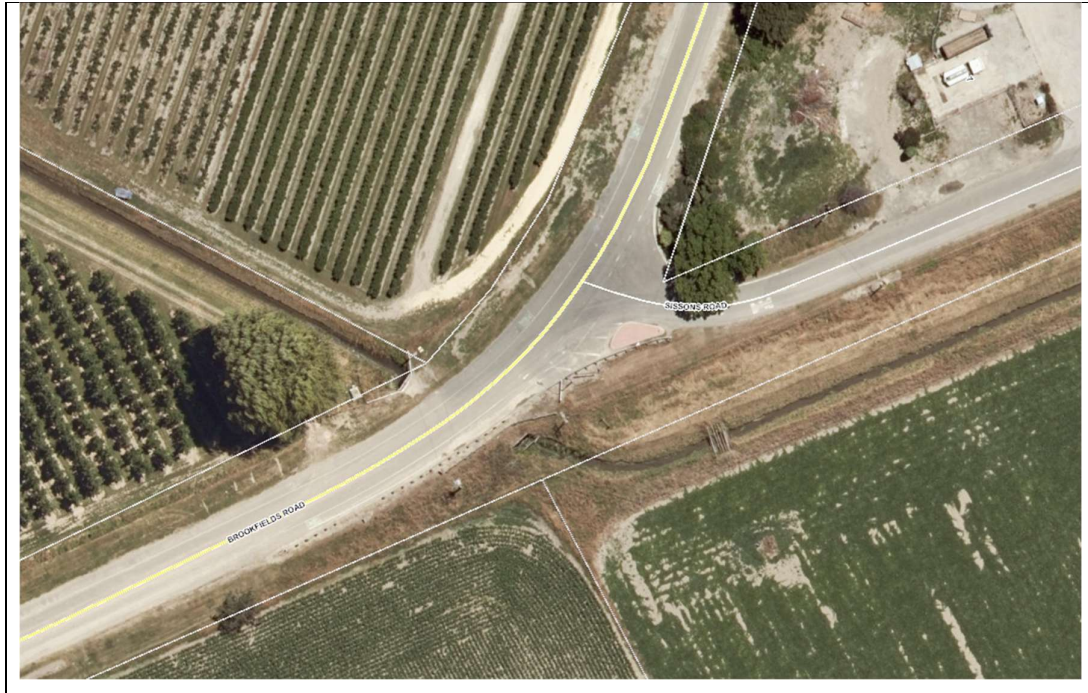


Figure 5 – Brookfields Road/Sissons Road Intersection (Aerial Source: HDC IntraMaps)

The geometry of the intersection is generally appropriate for heavy vehicle turning movements and visibility is good in all directions. The intersection approach is shown below by Figure 6.



Figure 6 – Brookfields Road/Sissons Road Intersection

The public road corridor of Sissons Road ends approximately 500m east of Brookfields Road. It has a sealed carriageway of about 5.7m for the first 380m which reduces to approximately 4.5m over the last 120m. This is barely adequate for two-way traffic movement although grass berms are available for informal passing as shown by Figure 7 below.



Figure 7 – Sissons Road narrow sealed section

Sissons Road is generally flat and has two horizontal curves approximately 200m and 400m from Brookfields Road. A posted speed of 80km/h applies but the operating speed is lower due to the horizontal geometry (see Figure 7).

An unsealed access continues from the gated end of Sissons Road. It is about 1.5km long and generally formed to a one-way width (of about 4.5m). Adequate unformed width is available, below overhead power lines, to allow for passing as shown by Figure 8 below.

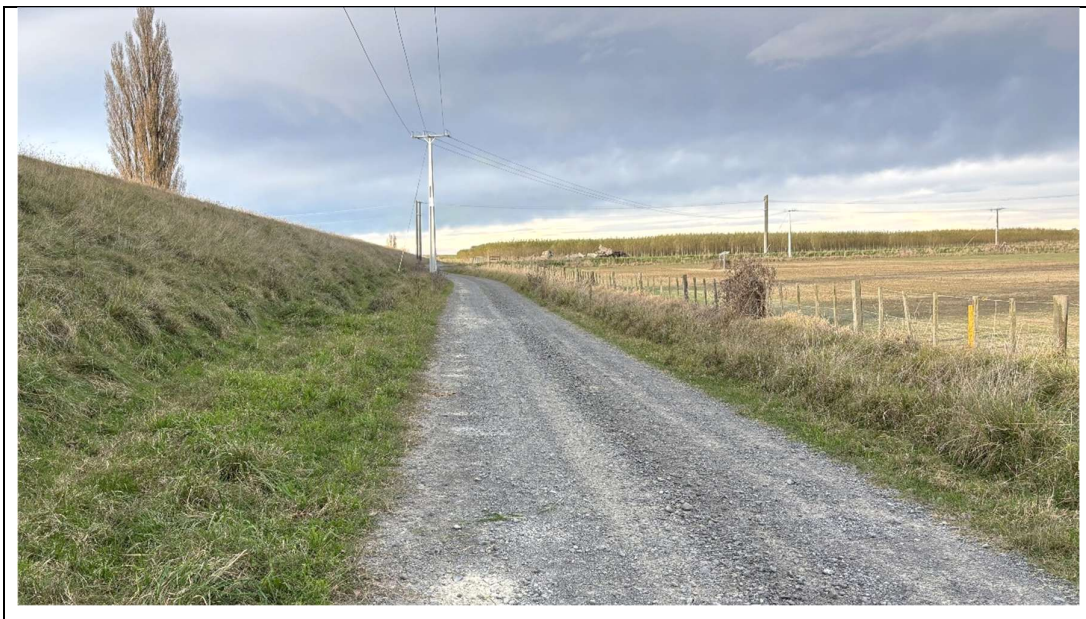


Figure 8 – Sissons Road unsealed section, adjacent berm

About 1km from the gate the access widens to allow vehicles to turn left, south, to the pump station as shown by Figure 9 below.



Figure 9 – Sissons Road unsealed section, Pump Station gateway

Forward visibility is limited by the curvature of the adjacent stop bank along the first section, the west end, of Sissons Road. At the east end the stop bank straightens and forward visibility is extended.

2.3 Traffic Volumes

The Mobileroad website, which sources traffic volumes from Council and New Zealand Transport Agency (NZTA) databases gives the following average daily traffic volumes on roads, in vehicles per day (vpd) around the site. The percentage of heavy commercial vehicles (HCVs) is also shown.

■ Pakowhai Road, north of Brookfields Road	11,400 vpd	11.9% HCV
■ Pakowhai Road, south of Brookfields Road	11,800 vpd	11.9% HCV
■ Brookfields Road, east of Pakowhai Road	3,625 vpd	31% HCV
■ Sissons Road	210 vpd	27% HCV

These traffic volumes indicate that Pakowhai Road functions as a moderately trafficked arterial route with an established heavy vehicle component, while Brookfields Road also accommodates a relatively high proportion of heavy vehicles associated with rural and industrial activity. In contrast, Sissons Road carries very low traffic volumes, reflecting its function as a local access road serving a limited number of properties.

In this context, the surrounding road network is generally well set up to accommodate temporary construction traffic associated with the proposed pump station, including heavy vehicle movements.

3. ROAD SAFETY

The NZTA Crash Analysis System (CAS) was used to review the road safety history of the area. The review covered the route between the site and Pakowhai Road, including the Brookfields Road/Sissons Road, Brookfields Road/Gilbertson Road and Pakowhai Road/Brookfields Road intersections.

A total of ten reported crashes were identified during the five-year review period 2021-2025 inclusive (as well as any data from 2026 to date). These included two serious injury crashes, three minor injury crashes and five non-injury crashes.

Most of the recorded crashes occurred at, or in the vicinity of, intersections on Brookfields Road. The crash history is dominated by loss of control crashes, particularly on the approaches to intersections and curves. Several crashes involved vehicles failing to negotiate turning movements or intersection approaches and leaving the roadway before striking roadside objects such as barriers, fences, retaining walls, signs and traffic islands.

A number of crashes occurred in wet conditions or during darkness. Reported contributing factors were predominantly driver-related and included inappropriate speed for conditions, loss of control while turning or braking, inattentiveness, driver inexperience and alcohol impairment. There were also isolated references to slippery road conditions associated with rain or surface contamination. None of the crashes involved heavy vehicles.

The crash history indicates that the curved alignment on Brookfields Road and the transition into intersection control points are relevant characteristics of the local road environment, particularly at the Brookfields Road/Sissons Road and Pakowhai Road/Brookfields Road intersections. These features have been considered in the development of the Construction Traffic Management Plan (CTMP) that is discussed later in this report.

No clear pattern of heavy vehicle crashes, congestion-related crashes, or right-turn gap selection crashes was identified within the recorded crash history. On this basis, the crash data does not identify any patterns or trends that would be expected to be exacerbated by the proposed works.

4. PROJECT OVERVIEW

The proposal involves the construction and operation of a replacement pump station at Pakowhai. The works form part of the Hawke's Bay flood protection programme and are intended to improve the management of stormwater and flood flows within the lower Tutaekurī River system.

Construction is expected to start in July 2026 and take approximately 12 months.

The proposed pump station comprises a compact structure housing multiple pumps, associated pipework, and supporting infrastructure. The design has been developed to minimise the extent of above-ground elements, with the majority of infrastructure located within a defined site footprint adjacent to the existing stop bank and drainage network.

Construction of the pump station will require typical civil works including site establishment, earthworks, installation of structural components, and delivery of plant and materials. These activities will generate temporary construction traffic, including heavy vehicles associated with the delivery of materials and removal of spoil.

Once operational, the pump station will function as key flood management infrastructure. Vehicle movements associated with the operation and maintenance of the facility are expected to be minimal and will not materially affect the surrounding road network.

5. TRAFFIC GENERATION

5.1 Construction Programme and Methodology

The analysis in this section is based on construction traffic and timeframe information supplied by Brian Perry Civil.

Construction of the Pakowhai Pump Station will be undertaken over a staged programme extending across multiple months. The works include site establishment, demolition of existing infrastructure, earthworks, construction of structural elements (including concrete pours and precast installation), installation of mechanical and electrical components, and final site reinstatement.

The construction programme indicates that activities will be undertaken progressively rather than concurrently across all phases. As a result, traffic generation will vary over time, with different activities generating different types and volumes of traffic.

The most traffic-intensive periods are associated with bulk earthworks (including material export and import), pipe installation and backfilling, and isolated peak activities such as large concrete pours or delivery of precast units.

5.2 Vehicle Types

Construction traffic will include a mix of light and heavy vehicles, including:

- Light vehicles associated with construction staff and site management, with up to approximately 20 vpd anticipated during peak workforce periods
- Heavy vehicles associated with:
 - bulk earthworks (export of excavated material and import of structural fill)
 - delivery of construction materials including aggregate, concrete and precast units
 - construction of access, crane pads and hardstand areas.
- Occasional heavy haulage associated with delivery of plant and equipment, including cranes and excavators

Heavy vehicle movements are expected to be concentrated during specific phases of the works and are expected to vary across the construction programme.

A small number of oversize and/or overweight vehicle movements are expected during the construction period, associated with delivery of site offices, crane mobilisation, and demolition activities. These movements will require appropriate permits and approvals.

The number of such movements is limited and they will occur infrequently. The majority of construction traffic will be standard heavy vehicles that do not require special permits.

5.3 Construction Traffic Generation

Earthworks and Bulk Material Movement

Earthworks activities represent the primary source of heavy vehicle traffic. Based on the construction information provided, peak bulk haulage activities include export of excavated material from site and import of structural fill and construction materials.

These activities generate up to approximately²:

- 62 two-way heavy vpd, and
- 8 heavy vehicle movements per hour (two-way)

These movements occur over defined periods (generally around 3-10 working days per activity) rather than continuously throughout the construction programme.

Concrete and Structural Works

Concrete works are undertaken across multiple smaller pours, with occasional larger pours resulting in short-term increases in truck movements.

- Typical concrete activity generates approximately 6-7 heavy vpd.
- A larger pour event (worst case) may generate:
 - 30-35 two-way truck movements in a day, and
 - up to 8-9 movements per hour (two-way) over a shorter duration.

Precast unit delivery is expected to occur over a short duration (approximately two days), generating moderate truck activity during that period.

Other Activities

Other construction activities, including site establishment, demolition, installation of services, and road and hardstand construction, generate relatively low volumes of traffic and would be less intense than the above estimates for the earthworks and concrete activities.

Up to 20 staff are expected on site. As a worst case, if they all travel in their own vehicles the daily generation of light vehicles would be some 40 vpd.

5.4 Transport Routes

Construction vehicles will access the site via Sissons Road and use Brookfields Road to connect to Pakowhai Road and travel either north or south on the arterial network from this point.

5.5 Operational Phase

Operational traffic generation will be minimal, limited to infrequent maintenance and inspection activities, and will not materially affect the operation of the surrounding road network.

² These estimates assume that the worst case is where the two import for earthworks tasks overall (20 vpd + 41 vpd, rounded to 62 vpd)

6. ASSESSMENT OF EFFECTS

6.1 Integration with the Road Network

The site is well connected to the surrounding road network via Sissons Road, which connects to Brookfields Road and the wider arterial network formed by Pakowhai Road. These roads provide access north towards the HEX and south towards Hastings and the broader urban area.

The surrounding road network is generally well suited to accommodating temporary construction traffic associated with the proposal, including heavy vehicle movements. Pakowhai Road and Brookfields Road already accommodate a notable proportion of heavy vehicle traffic associated with rural and industrial activity, while the low traffic volumes on Sissons Road mean that vehicle interactions are expected to remain limited.

6.2 Site Access

Access to the site is obtained via Sissons Road and an existing private access extending east from the end of the public road corridor. The route currently provides access to flood protection and rural infrastructure and is already used by maintenance and operational vehicles associated with the existing pump station and surrounding land uses.

The public section of Sissons Road provides a formed route from Brookfields Road to the gated end of the legal road. The sealed route generally operates within a low-speed rural environment. Traffic volumes are low and there are limited existing vehicle movements along the route.

Beyond the public road corridor, access continues via a private unsealed access road to the pump station site. Parts of this access route are relatively narrow and, in practice, operate more similarly to a single-lane rural access track than a conventional two-way public road. However, given the very low traffic volumes associated with the surrounding area and the temporary nature of the construction works, this arrangement is assessed as manageable.

Construction traffic effects associated with the narrow sections of access road can be appropriately managed through construction traffic controls and site management procedures. This may include:

- provision of localised passing opportunities or pull-over areas where required;
- site induction procedures for construction staff and drivers;
- site signage and temporary speed management controls;
- delivery management procedures and scheduled delivery windows;
- radio or call-up systems during periods of higher construction activity; and
- management of heavy vehicle movements through the Construction Traffic Management Plan (CTMP).

These measures are relatively standard for low-volume rural construction environments and are considered proportionate to the scale and duration of the anticipated construction traffic effects.

Overall, the access arrangements are considered suitable to accommodate the anticipated construction and operational traffic associated with the proposed pump station.

Although the Sissons Road bend (see Figure 7) is not wide enough for simultaneous two-way vehicle movement forward visibility is available to allow drivers to give-way to each other as currently occurs. The above measures will help to manage traffic through this area.

6.3 Wider Network Connections

The Brookfields Road/Sissons Road intersection is a priority-controlled T-intersection between a secondary collector road and an arterial road. The Pakowhai Road/Brookfields Road intersection is also a priority-controlled T-intersection connecting two arterial roads within the Hastings District road network.

Both intersections are of a standard and scale appropriate for their respective functions within the network and already accommodate rural and heavy vehicle traffic movements.

In particular, the Pakowhai Road/Brookfields Road intersection includes auxiliary treatments to support turning movements into Brookfields Road from both directions on Pakowhai Road.

Based on their existing form and function, both intersections are considered suitable to accommodate the temporary heavy vehicle movements associated with the construction of the proposed pump station. The geometry, visibility, lane configuration and traffic control arrangements provide for safe and efficient turning movements without the need for modification.

6.4 Network Capacity Effects

Traffic volumes on the surrounding road network are moderate to low in the context of their respective functions.

Pakowhai Road carries approximately 11,400-11,800 vpd, with heavy vehicles representing approximately 11.9% of traffic. Brookfields Road carries approximately 3,625 vpd, with a high heavy vehicle proportion of approximately 31%. Sissons Road carries approximately 210 vpd, also with a relatively high heavy vehicle proportion of approximately 27%.

Based on typical traffic patterns, peak hour volumes on these roads are expected to represent approximately 10–15% of daily traffic volumes. On this basis, peak hour flows, in vehicles per hour (vph), are estimated to be in the order of:

- 1,140 to 1,770 vph on Pakowhai Road, including approximately 135 to 210 heavy vph;
- 360 to 545 vph on Brookfields Road, including approximately 110 to 170 heavy vph; and
- 20 to 30 vph on Sissons Road, including approximately 5 to 10 heavy vph.

During the most traffic-intensive construction periods, the proposal is expected to generate up to approximately 62 two-way heavy vehicle movements per day and up to approximately 8 two-way heavy vehicle movements per hour. In addition, up to approximately 40 two-way light vehicle movements per day may be generated by construction staff during peak workforce periods.

When compared with existing traffic volumes, the additional construction traffic represents a small increase on Pakowhai Road and Brookfields Road. Even if all construction traffic were assigned to one section of Pakowhai Road, the increase would be less than 1% of daily traffic. On Brookfields Road, the increase would be in the order of 2-3% of daily traffic.

The proportional increase on Sissons Road would be higher, reflecting its very low existing traffic volume. However, the absolute increase remains modest, with peak construction traffic expected to add around 8 heavy vehicle movements per hour during the busiest construction activities. Given the low existing traffic volumes on Sissons Road, the temporary nature of the construction activity, and the rural access function of the road, this level of additional traffic is not expected to result in any material capacity or operational effects.

Overall, the additional construction traffic is not expected to result in any capacity-related effects on the surrounding road network that require physical mitigation. Potential construction effects more generally can be appropriately managed through the implementation of a Construction Traffic Management Plan (CTMP), as outlined in the following section.

7. MITIGATION OF CONSTRUCTION TRAFFIC EFFECTS

The construction of the replacement pump station will temporarily alter the operation of the road network in the area surrounding the site, potentially affecting both State Highways and roads managed by HDC.

The appropriate tool for managing and mitigating the potential construction-related traffic effects identified above is a Construction Traffic Management Plan (CTMP). This should be prepared in consultation with HDC reflect the various phases of the project and their differing potential effects.

The purpose of the CTMP is to provide a structured approach to the safe and efficient movement of construction traffic, ensuring that potential impacts on the surrounding road network are minimised and appropriately managed. It will also facilitate communication and coordination between the project delivery team and HDC.

A CTMP would typically include (but not be limited to) the following:

- **Construction traffic volumes and timing:** Confirmation of expected daily and peak traffic generation, and identification of periods of highest construction activity.
- **Communication protocols:** Contact details of key personnel and processes for managing stakeholders and public engagement.
- **Haul routes and access arrangements:** Confirmation of intended material sources and haul routes to and from the site.
- **Parking and access arrangements for staff and visitors:** Including management of access and on-site parking areas.
- **Traffic management measures:** Specification of temporary traffic management (TTM) controls (if any) such as signage, speed limit changes where necessary to maintain safe and efficient traffic flow.
- **Road safety management measures:** These can include driver protocols and any monitoring and reporting requirements.
- **Oversize and overweight movements:** Arrangements and route planning for any oversize or overweight vehicles.
- **Pedestrian and cyclist safety:** Identification of existing pedestrian and cycle facilities and provision for their safe operation during construction, including any required detours or protection measures.
- **Environmental controls:** Measures to manage dust, debris, and mud tracking onto public roads, and protocols for immediate cleanup if required.
- **Emergency access:** Assurance that emergency vehicle access to and through the construction site and adjacent properties is maintained at all times.

In this case, it is recommended that particular attention be paid to:

- Management of construction traffic along the narrower sections of Sissons Road and the private access road, including provision of temporary passing opportunities or pull-over areas where required.
- Clear communication of approved haul routes, site access procedures, and driver expectations through site inductions, delivery instructions and on-site signage.
- Provision of adequate on-site parking for the construction workforce.

The CTMP should be developed in consultation with, and be subject to certification by, HDC prior to the commencement of the relevant phase of construction works.

The CTMP should be prepared by a suitably qualified and experienced traffic management practitioner in accordance with the Code of Practice for Temporary Traffic Management (CoPTTM); and/or the New Zealand Guide to Temporary Traffic Management (NZGTTM).

With the CTMP process recommended above, the temporary effects associated with the construction of the pump station can be appropriately mitigated.

8. CONCLUSIONS

The surrounding road network has sufficient capacity to accommodate traffic associated with the construction of the Pakowhai Pump Station. The additional construction traffic represents a small increase in traffic volumes on Pakowhai Road and Brookfields Road and, while proportionally higher on Sissons Road because of its low existing traffic volumes, the absolute increase in traffic remains modest and acceptable in the context of the road's rural access function.

The site is well connected to the wider road network via Sissons Road, Brookfields Road and Pakowhai Road, which provide convenient access to the arterial network and surrounding rural and urban areas. The Brookfields Road/Sissons Road and Pakowhai Road/Brookfields Road intersections are appropriately designed to accommodate the anticipated construction traffic, including heavy vehicle movements, without requiring modification.

Potential effects are primarily associated with temporary changes to traffic conditions during construction, including increased heavy vehicle movements on Brookfields Road, Sissons Road and the private access road to the site. Particular consideration has also been given to the narrower sections of Sissons Road and the private access route, where construction traffic management measures will be required to manage vehicle interactions and maintain safe access.

The identified effects can be appropriately managed through the preparation and implementation of a Construction Traffic Management Plan (CTMP). In particular, the CTMP will address construction traffic routing, management of the site access and narrower road sections, delivery scheduling, temporary passing opportunities where required, construction workforce parking, and temporary traffic management measures associated with construction activities.

Overall, the construction-related traffic effects are assessed to be acceptable and can be appropriately avoided, remedied, or mitigated through the recommended measures.

Yours sincerely,

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Attach: None