Watercare Services Limited

Motions Catchment Improvement

Construction Traffic Management Assessment

August 2025

Jacobs

Watercare


Ki te ora te wai, Ka ora te whenua, Ka ora te tangata

Document Control

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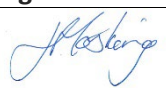
4	Reviewed and approved by	Jeremy Hosking	Senior Principal Transport Advisor, Jacobs NZ Ltd	7 August 2025	
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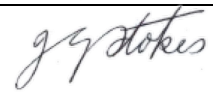
4	Approved for release by	John Stokes	Project Manager, Watercare Services Limited	14/08/2025	

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Executive Summary

Jacobs New Zealand Limited (Jacobs) have been commissioned by Watercare Services Limited (Watercare) to investigate and assess the construction related effects of completing the Motions Catchment Improvements Project (the Project). The planned works involves establishing a new sewer main between the Central Motorway Junction and Western Springs Park in Auckland.

The purpose of this report is to confirm the construction transport-related effects of constructing a new sewer main and to determine the level of controls (if any) that may be required to minimise, remedy or remove any potential construction traffic impacts to local properties and other road users. This assessment is based on the proposed construction methodology outlined in the Motions Collector Sewer Constructability Report (Rev 1) and the Contractor's erosion and Sediment Control Plan (ESCP), 2025, both completed by McConnell Dowell.

Construction of the planned sewer main is expected to take approximately 24 months (two years). The planned works includes the progressive establishment of multiple construction staging sites,[1] as shown in Figure 1. The staging sites will not all be occupied and active at any one time. The key transport issues identified relate to the need to supply or remove construction materials and equipment from staging sites where access and egress is potentially restricted on the local or surrounding roads due to narrow carriageways, including high levels of on-street carparking (refer Table 4 in Section 4.1 for details of these roads). The assessed impacts on the local and secondary collector roads will only occur during working hours (6 days per week) for the multi-jacking shaft construction methodology.

Beyond these staging sites, however, the assessed daily construction demands will be accommodated by the road network, with no noticeable effects to other road users or traffic flows.

Along these narrow roads the following are important mitigation measures, to be applied as appropriate to each individual road and staging site:

- Restrict haulage vehicles to one-way directional movements;
- During haulage movements temporarily time limit, or temporarily remove, on-street parking (in part or in full) on some local roads to enable safe passage and access;
- The local roads private vehicle crossings near the staging sites will need to be considered/managed to ensure safe and efficient passage (including for active modes) by affected users during construction;
- Consideration needs to be given to pedestrians and cyclists; and
- Co-ordination of construction personnel to reduce movements to and from site.

The majority of the shaft sites are adjacent to existing roads, so no additional access is required. Shafts 8, 2, 14, 15 & 12 will require additional access tracks to be formed.

Negotiating any temporary parking changes on these local roads and parks (including Staging Sites SS04 Nixon Park, SS12 Basque Park and SS15 Arch Hill Scenic Reserve) will require consultation by Watercare (and their appointed contractor) with the affected property owners. Any temporary parking changes will require input and approval by Auckland Transport (AT).

[1] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell

Consideration needs to be given to safe access across the construction site entrances for pedestrians and cyclists at all staging sites; especially continued access to the Te Ara I Whiti – Lightpath and North Western Cycleway. In particular, at staging site SS01 for safe access to the Te Ara I Whiti – Lightpath; staging sites SS02, SS03, SS04, SS05, SS06 and SS07 for access to the North Western Cycleway and local paths; and SS13 and SS14 for access to local paths.

An alternative tunneling methodology proposed for some shafts involves a TBM method, which occurs 24 hours, 7 days a week. If TBM is the preferred construction methodology, the earthworks volumes and resulting construction traffic may be reduced at individual shaft sites as TBM generated spoil will be removed at the Western Springs shaft site.

It is recommended that Watercare (in collaboration with their appointed contractor) develops a Construction Traffic Management Plan (CTMP), prepared under the direction of a Chartered Professional Engineer, by a person with the necessary Site Traffic Management Specialist (STMS) qualifications and experience for that purpose. The final CTMP will also require the full review and approval by AT and New Zealand Transport Agency (NZTA) as the road controlling authorities that manage the road corridors that are likely to be used by haulage vehicles.

The CTMP will confirm all temporary traffic management controls to be adopted and applied by the contractor to ensure the safe and efficient transportation of all road users during the staged delivery and removal of construction plant / machinery, materials and staff during the establishment of the proposed sewer main. The CTMP will need to address any potential disruption to local businesses and/or residents including (but not necessarily limited to) potential temporary limits to traffic speeds, time limits for on-street parking, continued property access/egress, management of pedestrian facilities, and temporary alternative cycling route(s).

With the implementation of these recommended provisions, the transport related effects associated with the establishment and operation of the Project can be effectively mitigated and managed. Accordingly with the application of an approved CTMP and its active traffic management controls (designed in conjunction with the appointed Contractor); engagement with stakeholders and Road Controlling Authorities; the transport effects arising from the Project are not significant, will be temporary only, and can be effectively accommodated on the road network.

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1 Introduction

Jacobs have been commissioned by Watercare to investigate and assess the construction related effects of completing the Project. The purpose of this report is to confirm the potential construction transport-related effects of the Project and to determine the level of controls (if any) that may be required to avoid, minimise or remedy any potential construction traffic impacts to local properties and road users.

The report therefore covers a broad description of the Project, the haulage route(s) and general condition of the roads expected to be used by construction traffic during the establishment of the Project. It then includes an assessment of the daily average volume of construction traffic likely to be generated during construction per staging site and the ability of the identified haulage routes to safely and effectively support anticipated demands. It then concludes with a range of recommendations to mitigate all potential adverse traffic effects in a proactive and timely manner.

This assessment is based on the proposed construction methodology outlined in the Motions Collector Sewer Constructability Report (Rev 1) and the Contractor's erosion and Sediment Control Plan (ESCP), 2025, both completed by McConnell Dowell.

1.1 About Watercare

Watercare is a lifeline utility responsible for the planning, maintenance, and operation of wastewater services to communities in Auckland. Watercare's activities and programmes are funded through user charges and borrowings. It is required by the Local Government (Auckland Council) Act 2009 to be a minimum-cost / cost-efficient service provider.

Watercare collects wastewater from 1.7 million people's homes, including trade waste from industry, through approximately 8,700 Km of pipelines. It pumps the water through 534 pump stations, treats approximately 410 million litres of wastewater daily through 18 treatment plants and disposes in environmentally responsible ways to protect the public health, the local environment and coasts and harbours.

Watercare's activities are intrinsically linked to the health of people and the natural environment. Auckland's wastewater sources must be sufficient volume and reliability to improve the quality of beaches and waterways.

Watercare carry out significant work to upgrade and build infrastructure, to maintain levels of service and provide capacity for a fast-growing population. They ensure Auckland and its people continue to enjoy dependable services by upgrading its assets, planning, building, and delivering new infrastructure in cost-efficient ways.

2 Proposed Sewer Main Construction

Construction of the planned sewer main is expected to take approximately 24 months (two years). The planned works includes the progressive establishment of multiple construction staging sites[2] as shown in Figure 2. The current construction approach includes that the staging sites are phased and will not all be occupied and active at any one time.

Figure 2: Proposed alignment and staging sites (SS#)

All staging sites will involve the transportation of plant/machinery, spoil/fill processing, materials storage and staff activities. Each site will involve a range of light and heavy vehicles' movements to safely access, drop off or collect materials.

There are also two locations (Suffolk Reserve SS02 and Western Springs Park SS08) that have been identified that will allow more room to support the construction sites and enable additional storage space for materials and plant if required.

The staging sites encompass all temporary and permanent facilities required throughout the construction phase and will typically include zones and facilities for:

- Construction activities, such as excavation, foundation works, and structural installation.
- Temporary works including scaffolding, formwork, and construction access roads.
- Operational areas for equipment and machinery.
- Storage for materials, plant, and construction site offices.
- Facilities for workers, including amenities and designated safety zones.
- Laydown areas for tunnel lining segments or ring components, particularly where tunnel boring machines (TBMs) are used, and
- Dedicated zones for slurry treatment, ventilation plant, spoil (muck) handling and disposal and ancillary systems (tunnelling support at launch sites).

[2] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell

3 Construction Traffic Generation

Construction activities, including truck movements, will typically occur during standard construction hours, which are as follows:

- Monday to Friday: 7 am to 6 pm (site mobilisation and pack down works are proposed to occur 30 mins before and after these time windows);
- Saturdays: 8 am to 6 pm;
- Sundays or public holidays: no works; and
- Tunnelling activities using the pipe jacking method will occur during the standard daytime construction hours.

Closed Circuit Television Video inspections, and service relocations and their connections will be carried out at night to reduce service disruptions.

To ascertain the likely volume of construction traffic generated by the proposed works, conservative traffic volume rates for the range of haulage and construction related activities have been applied. Table 1 captures the total truck volumes for spoil removal capturing a 20% bulking factor, while Table 2, includes vehicle movements to the sites according to the potential construction programme for each staging site.

The range of one-way construction movements per staging site, includes:

- Truck loads for spoil removal[3], including a 20% bulking factor[4]. These movements are over different construction time periods depending on the site, as shown in Table 1;
- Material supply to staging sites, including pipes, chambers. These involve 6- 8 deliveries per day for 5 working days to each site;
- General deliveries (incidentals), 3 to 5 deliveries per day (light truck only) to each site;
- Backfill of shaft, these movements involve a maximum of 8 trucks per day to each site for 5 working days; and
- Construction personnel movements, up to 80 light vehicle movements (40 vehicles one way), depending on the site.

Where possible the local roads and access to the staging sites will be operated as one-way movements to the site. Table 2 captures the one-way routes and return vehicle movement totals.

The movements per site in Table 2 do not reflect a total daily volume per staging site as the different types of movements can occur on different construction days (i.e. spoil removal is likely to occur ahead of backfill of shaft related movements). However, these movements do provide a range of potential maximum daily traffic volumes during the spoil removing and excavation period based on the McConnell Dowell construction approach.

The shaft piling and excavation timeframe has been used for assessment as it represents the highest truck volumes. After the shaft piling and excavation phase there will be less vehicle movements, as movements are more related to deliveries and construction personnel trips.

[3] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell

[4] The material quantities are as solid in place and a bulking factor of 20% has been applied to the quantities applied from the construction report.

Table 1: Daily volume of truck loads per staging site for spoil removal

	Movements over the piling and excavation period				Per day
Staging site and location	Truck loads (spoil removal) [5]	20% bulking factor	Truck loads incl. 20%	Program [6]	Truck loads per day
SS1 - Corner of East Street and Canada Street	195	39	234	40 days	6
SS2- Suffolk Street	1364	273	1637	70 days	23
SS3 - lower end of Mostyn Street	114	23	137	35 days	4
SS4 - Car park adjacent to Fourth Ave / Nixon Park	981	196	1177	40 days	29
SS5 - Kingsland Avenue	146	29	175	40 days	4
SS6 - Finch Street	37	7	44	30 days	1
SS7 – Myrtle Street [7]	840	168	1008	35 days	29
SS8 – Western Springs / Bullock Track access	567	113	680	50 days	14
SS9 - Edinburgh Street	13	3	16	5 days	3
SS10 - Gundry Street	23	5	28	5 days	6
SS11 - Burgoyne Street	27	5	32	5 days	6
SS12 and 12a - Basque Park / Fleet Street	99	20	119	10days	12
SS13 - Cooper Street	16	3	19	5 days	4
SS14 - Access from Cooper Street	67	13	80	5 days	16
SS15 - Arch Hill Scenic Reserve	13	3	16	5 days	3

Table 2: Construction traffic movements per staging site

	Movements per day (one direction)					
Staging site and location	Truck loads	Material supply	General deliveries	Backfill of shaft	40 light vehicles	Range
SS1 - Corner of East Street and Canada Street	6	8	5	8	40	40 - 67*
SS2 - Suffolk Street	23	8	5	8	40	40 - 84*
SS3 - lower end of Mostyn Street	4	8	5	8	40	40 - 65*
SS4 - Car park adjacent to Fourth Ave / Nixon Park	29	8	5	8	40	40 - 90*
SS5 - Kingsland Avenue	4	8	5	8	40	40 - 65 (130)
SS6 - Finch Street	1	8	5	8	40	40 - 62 (124)
SS7 – Myrtle Street	29	8	5	8	40	40 - 90*
SS8 – Western Springs / Bullock Track access	14	8	5	8	40	40 -75 (150)
SS9 - Edinburgh Street	3	8	5	8	40	40 - 64 (128)
SS10 - Gundry Street	6	8	5	8	40	40 - 67 (134)
SS11 - Burgoyne Street	6	8	5	8	40	40 - 67*
SS12 and 12a - Basque Park / Fleet Street	12	8	5	8	40	40 - 73*
SS13 - Cooper Street	4	8	5	8	40	40 – 65 (130)
SS14 - Access from Cooper Street	16	8	5	8	40	40 – 77 (154)
SS15 - Arch Hill Scenic Reserve	3	8	5	8	40	40 - 64*

*Staging site construction methodology includes potential for one-way movements to access site.

(#) Return movements total where vehicles will return the same direction/route exiting the Staging Site.

[5] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell

[6] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell – Appendix B, Excavation phase for each site

[7] Staging Site 7a Ivanhoe Road is a Manhole Only site (MESC, 2025)

As the staging sites construction is phased from SS08 to SS01 and then from SS13 to SS09, Table 3 shows a maximum daily volume of 494 trips for the proposed works across the network. This will only be during the peak construction works and not for the entire duration of construction at any of the staging sites. It is important to highlight that this considers 40 construction personnel vehicles (one way) per site. Some sites will have less than 40 one-way movements, and it is also recommended that staff travel planning / carpooling is undertaken to reduce these movements further.

Table 3: Construction traffic movements for phasing of concurrent staging sites

	One-way[9]	Return[10]
Staging sites phasing	**Phased sites**	
8,7,6,5	292	494
7,6,5,4	308	434
6,5,4,3	283	409
5,4,3,2	305	370
4,3,2,1	307	307
3,2,1,13	281	346
2,1,13,14	293	435
1,13,14,15	273	415
13,14,15,12	279	421
14,15,12,11	282	358
15,12,11,10	271	338
12,11,10,9	271	402
11,10,9	198	329
10,9	131	262
9	64	128

An alternative tunneling methodology proposed for some shafts involves a TBM method, which occurs 24 hours, 7 days a week. If TBM is the preferred construction methodology, the earthworks volumes and resulting construction traffic may be reduced at individual shaft sites as TBM generated spoil will be removed at the Western Springs shaft site.

[8] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell – timings of each site
[9] Totals the one-way direction numbers in Table 2 for the staging sites referred to in Table 3
[10] Totals return numbers in Table 2 for the staging sites referred to in Table 3, unless a staging site is proposed as one-way

4 Assessment

4.1 Wider road network

All construction equipment, materials, and construction personnel will need to be transported to and from the various staging sites using the available roading network. As a contractor has yet to be appointed, the sources of construction materials and spoil disposal locations have yet to be confirmed. Nevertheless, this assessment has assumed all construction related trips will likely need to use the Auckland Motorway network as well as Arterial, Primary and Secondary Collector and local Access roads to travel to and from the planned works.

The likely key transport routes expected during the Project's construction are captured in Table 4, along with the identification of traffic management considerations along the routes. Site inspections have been undertaken to confirm the condition of these routes and the viability of these roads to accommodate construction traffic, as well as to identify any necessary mitigation / temporary traffic management controls.

The assessed maximum daily construction volume of 494 trips (involving heavy commercial trucks, vans and light vehicles) can be accommodated by the wider transport network. The haulage routes will be via the Auckland Motorway network, and then be spread out across the wider Arterial, Primary and Secondary Collector roads to access the four staging sites. For example, the Western Springs shaft site (SS08) is on the opposite side of the Northwestern Motorway from the other three smaller sites being constructed at the same times so the vehicle movements will use different routes across the network to access the sites. In addition, SS15 is proposed to be accessed directly adjacent to the Northwestern Motorway and SS02 is proposed to be accessed via the emergency access roadway onto State Highway 16 (SH16), both sites will require temporary traffic management controls.

The linking Arterial and Collector Roads are also expected to be used to access the staging sites as probable haulage routes are observed to have suitable carriageway provisions and do not require any specific temporary traffic management controls.

Table 4: Key Transport Haulage Routes

Haulage Road	Road Type	AADT	Sites	Haulage Connections	Comments
Auckland Motorway	SH1	135000	1 to 15	Potential route for all construction equipment, materials, waste, staff	National route designed and constructed to support construction vehicles.
Alex Evens Street	Arterial	10470	2 to 7	Access from SH1 to Ian McKinnon Drive and New North Road supporting SS2 to 07.	Arterial Road designed and constructed to support construction vehicles.
Ian McKinnon Drive	Arterial	23520	2 to 7	Access from Alex Evens Street (and SS02) with New North Rd (SS03-07)	Arterial Road designed and constructed to support construction vehicles.
Devon Street	Access Road	728	2		Access Road, narrow in width**. On street parking friction will need temporary removal during haulage periods.**
Virginia Avenue West	Low Volume Road	210	2		Low volume local road, narrow in width. **On street parking friction will need temporary removal during haulage periods**.
Suffolk Street	Low Volume Road	60	2		Low volume local road, narrow in width. **On street parking friction will need temporary removal during haulage periods.**
New North Road	Arterial	19532	3 to 7	From SH16 to SS3,04,05,07	Arterial Road design and constructed to support construction vehicles.
Mostyn Street	Secondary Collector	1047	3		Secondary Collector Road, first section from Don McKinnon Dr is wide, width narrows after Aitken Terrace. **From here on street parking will need temporary removal during haulage periods.**
Central Road	Secondary Collector	1334	4		Secondary Collector Road, width narrows after Second Avenue. **On street parking will need temporary removal during haulage periods on last section only.**
Kingsland Avenue	Secondary Collector	1130	5		Secondary Collector Road, width on street parking only allowing one way flow. **On street parking (one side only) will need temporary removal during haulage periods (full section).**
Western Springs Road	Primary Collector	3973	5 to 7	Access from SH16 to SS05 to 07.	Collector Road designed and constructed to support construction vehicles.
Mountain View Road	Primary Collector	4473	6		Primary Collector Road designed and constructed to support construction vehicles.
Levonia Street	Secondary Collector	1047	7		Secondary Collector Road, narrow width. **On street parking will need temporary removal during haulage periods.**
Northwestern Motorway	State Highway 16		1 to 15	Potential route for all construction equipment, material waste, staff	National route designed and constructed to support construction vehicles.
Newton Road (Nth)	Arterial		7 to 11	Route from SH16 to Sites SS07,11,14,15	Arterial Road designed and constructed to support construction vehicles.
Great North Road	Arterial		7 to 11	Route from Newton Road to Sites SS07, 11,14,16	Arterial Road designed and constructed to support construction vehicles.
Burgoyne Street	Access Road	366	11		Local Access Road, narrow width. **On street parking will need temporary removal during haulage periods.**
Nixon Street	Secondary Collector	1047	11		Secondary Collector Road, narrow width. **On street parking will need temporary removal during haulage periods.**

Cooper Street	Access Road	316	14		Local Access Road, width on street parking only allowing one way flow. **On street parking (one side only) will need temporary removal during haulage periods (full section).**
Commercial Road	Access Road	261	15		Local Access Road, width on street parking only allowing one way flow. **On street parking (one side only) will need temporary removal during haulage periods (full section).**
Tuarangi Road	Arterial	3716	7		Arterial Road, width on street parking only allowing one way flow. **On street parking (one side only) will need temporary removal during haulage periods (full route).**
Ivanhoe Road	Access Road	466	7		Local Access Road, width on street parking only allowing one way flow. **On street parking (one side only) will need temporary removal during haulage periods (full section).**
Bullock Track	Arterial	10410	8		Arterial Road with parking prohibited on both sides of the road.
Newton Road (Sth)	Arterial		7 to 11	Route from SH16 to SS12 and 12a	Arterial Road designed and constructed to support construction vehicles.
New North Road	Arterial	18014	12	Route from Newton Road Sth to SS12 and 12a	Arterial Road designed and constructed to support construction vehicles.
Rendall Place	Low Volume Road	157	12 and 12a		Low Volume Road with good width enabling two-way haulage flows.

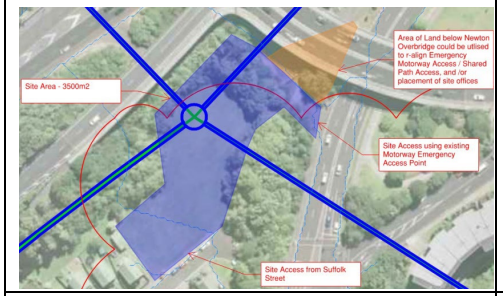
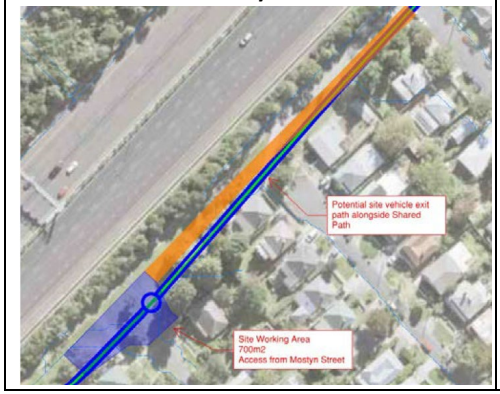
4.2 Staging sites

It is recommended that Watercare (in collaboration with their appointed contractor) develops a Construction Traffic Management Plan (CTMP), prepared under the direction of a Chartered Professional Engineer, by a person with the necessary Site Traffic Management Specialist (STMS) qualifications and experience for that purpose. The CTMP could be prepared in stages given the incremental active status of each staging site and to enable site specific interventions when needed. Appendix A includes an outline of what the CTMP should include to ensure the Project's construction transport effects are addressed.

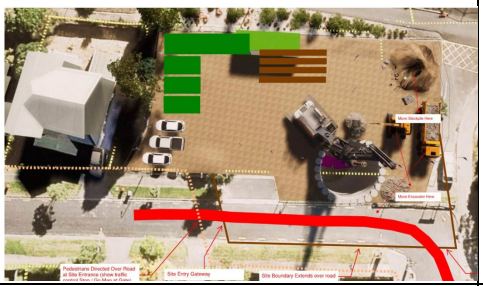
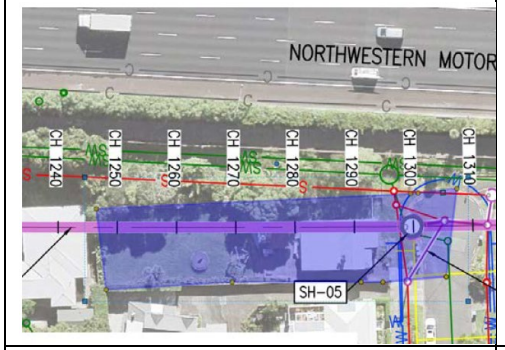
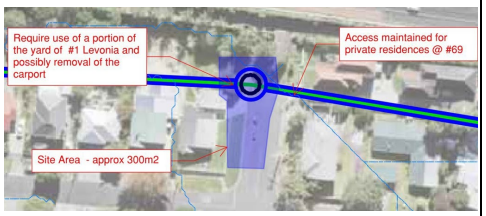
An overview of the considerations during construction relating to access, parking and walking and cycling facilities for each staging site is captured in Table 5.

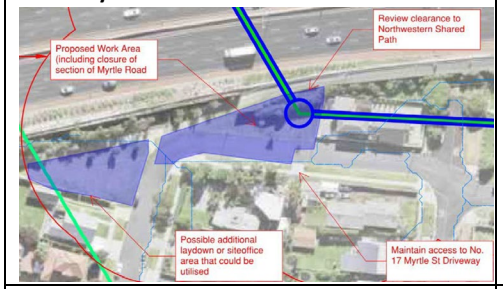
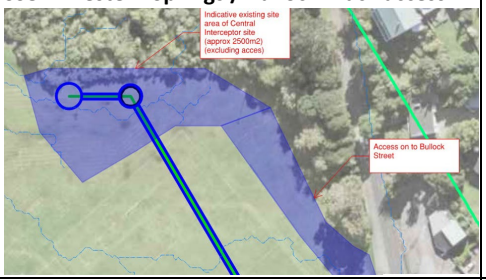
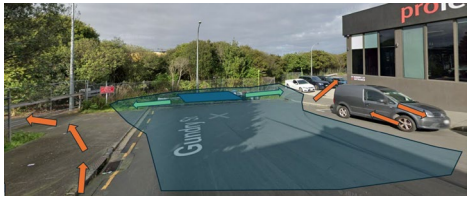
Potentially affected parties are also captured.

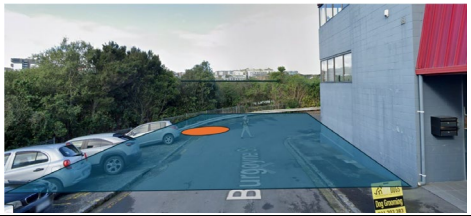
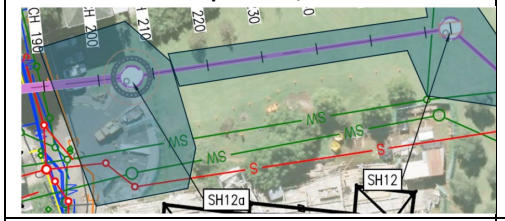
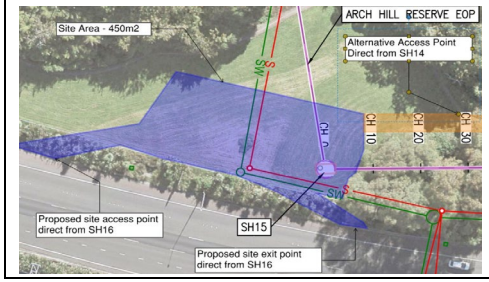
Table 5: Overview of staging sites access considerations during construction[11]

Staging site and location	Site access	Walking and cycling	Potentially affected parties
SS1 - Corner of East Street and Canada Street 	Aspiration to utilise the CRL works area and / or utilise the adjacent carpark off Canada Street. This carpark area could be used for offices, cabins, laydown and parking. The alternative would be to set up in Canada Street if the CRL site is not available which would result in a minor detour to be outlined in the CTMP. This section has no stopping at any time parking restrictions so there is no impact on on-street parking for the site working area.	Pedestrian and cyclist safety and access are important consideration for the CTMP. The East Street/ Cananda Street entrance to the Te Ara I Whiti – Lightpath is in close proximity to the Staging site and will need consideration in the CTMP.	Auckland Transport (AT) and local cycling advocacy groups. 29 and 38 East Street
SS2 Suffolk Street 	Access may be via the emergency access roadway on to SH16 from Ian McKinnon Drive. The construction team will need to ensure that this always remains clear of construction traffic and minimise access using the motorway where possible. The lower area from Suffolk Street could be used for deliveries and utilised as a location for a separation plant or spoil handling facility. Access is via residential and narrow streets so access would be limited to 6-wheelers only and on-street parking may be temporarily restricted during these movements, especially along sections of Suffolk Street. Will require additional access tracks to be formed.	Pedestrian and cyclist safety and access are important consideration for the CTMP. The Northwestern shared path will need to be diverted around the construction access point.	NZTA AC parks Auckland Transport and local cycling advocacy groups.
SS3 - lower end of Mostyn Street 	One-way vehicle movement from Mostyn Street via the creation of an access lane eastwards to Alexander Street should be explored to minimise impacts of vehicle movements and turning on Mostyn Street. On-street parking along sections of Mostyn Street may be temporarily restricted.	Located adjacent to the Northwestern Shared Path, at the lower end of Mostyn Street within a small public reserve. To enable the one-way access lane the Shared Path will need to be temporarily narrowed. Pedestrian and cyclist safety and access are important consideration for the CTMP.	Auckland Transport and local cycling advocacy groups. 37 Alexander Street

[11] Motions Collector Sewer Constructability Report – Rev 1, McConnell Dowell

SS4 - Car park adjacent to Fourth Ave and Nixon Park 	Central Road and Kingland Ave are both relatively narrow residential roads with a steep grade from New North Road towards to SH16. Use of a one-way system for construction vehicles would minimise the likelihood of vehicles having to stop on the road when encountering other vehicles. The shaft location as drawn on the concept drawings would require the closure of at least one lane of traffic on Fourth Ave, further requiring the adoption of the one-way system. While this section of Fourth Ave has no stopping at any time parking restrictions, due to the narrow nature of Fourth Ave, some sections of on-street parking may be temporarily restricted. Alternative parking for Nixon Park should be addressed in the CTMP.	Consideration will need to be given to pedestrian and cyclists utilising the Northwestern cycleway and main connection point adjacent to Nixon Park. There is potential narrowing of the pathway adjacent to the site along Central Road. Pedestrian and cyclist safety and access are important consideration for the CTMP. Traffic controllers should be utilised at the site entry / exit points to ensure construction vehicles do not clash with cyclists / pedestrians.	AT and local cycling advocacy groups. ACC Parks
SS5 - Kingsland Avenue 	CTMP considerations to cover access requirements and vehicle turning at the end of Kingsland Avenue. Some sections of on-street parking along Kingsland Avenue may be temporarily restricted.	Consideration will need to be given to the adjacent Northwestern Shared Pathway. There is a connection from the path on to Kingsland Ave that will need to be maintained. This can be done via the same access for the driveway at No. 41. Pedestrian and cyclist safety and access are important consideration for the CTMP.	AT and local cycling advocacy groups. 52 Kingsland Avenue (crown owned property) 41 Kingsland Avenue
SS6 - Finch Street 	CTMP considerations to cover access requirements and vehicle turning at the end of Finch Street. The end of Finch Street may be required for construction area. The berm on the western side of Finch Street could be temporarily converted into an access lane to maintain access to the private properties at the end of Finch Street. Some sections of on-street parking along Finch Street may be temporarily restricted.	Consideration will need to be given to the adjacent Northwestern Shared Pathway. Access maybe restricted during construction. Consider the use of the temporary access lane to access the cycleway. Pedestrian and cyclist safety and access are important consideration for the CTMP.	AT and local cycling advocacy groups. 1 Levonia Street 69 Finch Street 69A, B and C Finch Street 67 Finch Street

SS7 – Myrtle Street 	As there are no driveways on the corner of Mrytle Street, the construction approach proposes closure of a section of Myrtle Street to provide safe access. Access would need to be maintained to 17 Mrytle Street. The on-street parking within this section will also be restricted.	A temporary diversion will have to be established for the Northwestern Shared Pathway from Warwick St and along Myrtle Street. Pedestrian and cyclist safety and access are important consideration for the CTMP.	AT and local cycling advocacy groups. 17 Mrytle Street. Sunbeams Private Kindergarten (11 Mrytle Street)
SS8 – Western Springs / Bullock Track access 	It is not envisaged that there would be any significant access constraints to the site based on the existing layout. Access to the existing Watercare site compound has been established and currently remains. The Bullock Track has no stopping at any time parking restrictions so there will be no impact on on-street parking along this road. Will require additional access tracks to be formed.	Pedestrian and cyclist safety and access across the site entrance are important consideration for the CTMP.	AC parks
SS9 - Edinburgh Street 	Shaft 9 is located at the end of Edinburgh Street in a short dead-end area with an emergency SH16 SB access to the south (via locked gate) and a business access to the north. This area has no stopping at any time parking restrictions so there will be no impact on on-street parking on this section of the road. However, as the rest of the road is narrow there may be temporary parking restrictions to enable safe access to the site.	Pedestrian and cyclist safety and access are important consideration for the CTMP.	NZTA 27 Edinburgh Street
SS10 - Gundry Street 	Shaft 10 is located at the end of Gundry Street in a short dead-end area with an emergency SH16 SB access to the south (via locked gate) and a business access to the north. Access to 19 Gundry Street car park is an important consideration for CTMP.	Pedestrian and cyclist safety and access are important consideration for the CTMP.	NZTA 19 Gundry Street

SS11 - Burgoyne Street 	Shaft 11 is located at the end of Burgoyne Street in a loop road with building access and off-street parking. The on-street and off-street parking may require temporary parking restrictions to enable safe access to the site.	Pedestrian and cyclist safety and access are important consideration for the CTMP.	15 Burgoyne Street
SS12 and 12a - Basque Park / Fleet Street 	SS12 access is from Fleet Street and SS12a access from Rendall Place. The CTMP considerations include access requirements along Fleet Street and Rendall Place. The parking within Basque Park is required as part of the staging area. The CTMP for this staging site should address this loss of parking and seek to identify alternative parking. Fleet Street has no stopping at any time parking restrictions. Will require additional access tracks to be formed.	Pedestrian and cyclist safety and access are important consideration for the CTMP.	AC Parks Auckland Transport
SS13 - Cooper Street 	From this site, a minimum 4m wide, heavy vehicle access track to SS14 will also need to be constructed along the alignment of the existing walkway through the reserve. Due to the narrow street and construction area at the end of the cul-de sac the construction approach is for heavy vehicles to pull into Seddon Street, then reverse down the road to access the site. This is an important consideration of the CTMP and traffic control for this site. On-street parking may need to be temporarily restricted for access to this staging area.	The existing walkway will need to be closed for the duration of the works as there is insufficient space for this to be safely realigned away from the construction traffic. This pathway can be diverted using existing walkways connections to Commercial Street and Seddon Street so there should be minimal impact on users. Pedestrian and cyclist safety and access are important consideration for the CTMP.	AC Parks
SS14 - Access from Cooper Street	Access the SS14 is via an access track from SS13 on Cooper Street. CTMP will be needed covering the access between the sites. Will require additional access tracks to be formed.	As per SS13 walkway diversions will be required to Commercial Street and Seddon Street.	AC Parks
SS15 - Arch Hill Scenic Reserve 	Directly adjacent to SH16 and is proposed to mitigate impact on the Reserve that the site is accessed off the motorway with entry and exit points. Will require additional access tracks to be formed.	Pedestrian and cyclist safety and access are important consideration for the CTMP.	AT, NZTA AC Parks Grey Lynn Library St Joseph's School

4.2.1 Local road network

Almost all the affected local roads are narrow by design and their age, with on-street parking, and therefore access to many of these local roads is also often restricted at their connections with Collector and Arterial roads. This prohibits the use of truck and trailers for bulk transportation due to tight turns required and/ or narrow streets, which in some instances restricts the truck and trailer to be able to turn to exit, even considering the staging site area.

Accordingly, the local roads with on-street parking, as captured in Table 4 and Table 5, will require the temporary removal / time limits on the on-street parking (either in part or in full) to ensure construction traffic is able to transport materials / equipment safely and efficiently.

4.2.2 On-street parking and vehicle crossings

The temporary removal / restrictions on existing on-street parking can be limited to occur during the proposed construction hours (as outlined in section 4) and when the staging sites have light and heavy vehicle movements scheduled. Based on an indicative construction programme the longest piling and excavation period is 70 days (12 weeks), this is when the heavier truck movements and highest volumes of truck movements occurs. Therefore, the local roads needed to access the staging sites will require temporary on-street parking /time limit restrictions for no more than 11 hours per day (i.e. between 7am to 6pm) on weekdays and 10 hours on Saturdays during the construction of each vertical shaft and associated tunnelling, up to 12 weeks and isolated occurrences if one off deliveries occur outside the initial excavation period. Once the contractor is appointed, the parking restrictions will be able to be further refined.

There are also temporary parking changes for local parks (including staging sites SS04 Nixon Park and SS12 Basque Park) which require consideration of alternative parking arrangements.

The local roads the staging sites are located on, support residential and commercial land use activities all of which have individual or shared vehicle crossings. Access to properties will be protected through temporary traffic management controls on these local roads. Table 5 provides commentary on where properties are within or are in close proximity to a staging site.

This property access, and the need to temporarily remove / time limit on-street parking, will require the appointed contractor to inform the affected property owners. Before any consultation is undertaken with AT and other affected parties (refer to Table 5), Watercare's appointed contractor will need to confirm their planned construction programme; the preferred haulage routes; and the levels of temporary traffic controls (and any supporting communication tools) they intend to employ. These will be captured in a CTMP, which may be provided in stages to reflect the phased construction programme.

4.2.3 Walking and cycling facilities

Consideration needs to be given to safe access across the construction site entrances for pedestrians and cyclists at all staging sites. In particular, access considerations and/or temporary relocated shared path or cycling facilities are required for:

- Staging Site SS01: The East Street/ Canada Street entrance to the Te Ara I Whiti - Lightpath, is in close proximity to the staging site and will need to be careful considered in the SS01 CTMP;
- Staging site SS02: The Northwestern shared path will need to be diverted around the construction access point;
- Staging site SS03: To enable the one-way access lane the Shared Path will need to be temporarily narrowed;
- Staging site SS04, SS05 and SS06: Careful consideration will need to be given to pedestrian and cyclists utilising the Northwestern cycleway and local connections;
- Staging site SS07: Temporary diversion will have to be established for the Northwestern Shared Pathway from Warwick Street and along Myrtle Street; and
- Staging sites SS13 and SS14: The existing walkway will need to be closed and diverted using existing walkways connections to Commercial Street and Seddon Street.

Once the construction approach is refined discussion and consultation will need to be undertaken with Auckland Transport and local cycling advocacy groups on these changes to provide safe and continued access to these shared and cycle paths during the construction period. These will be captured in a CTMP, which may be provided in stages to reflect the phased construction programme.

4.2.4 Construction personnel movements

While each staging site will require different levels of construction personnel movements there is the ability to reduce the volume of personnel vehicle trips to site. This can be achieved through the use of construction site travel planning as part of the CTMP, considering van/car pooling and co-ordination of movements between near-by sites. The volume of construction personnel movements will be further refined once the overall construction methodology and approach is refined.

5 Conclusion

The construction vehicle movements per site will result in a temporary increase in local traffic. These effects will be largely localised, with some impacts on-street parking availability and site access. However, based on the estimated quantities involved and the anticipated construction requirements associated with the completion of each vertical shaft and associated tunnelling needs, the assessed impacts on these roads will not exceed 12 weeks (6 days per week) per shaft and only occur during construction working hours.

It is recommended that Watercare (in collaboration with their appointed contractor) develops a CTMP, prepared under the direction of a Chartered Professional Engineer, by a person with the necessary Site Traffic Management Specialist (STMS) qualifications and experience for that purpose. The CTMP could be prepared in stages given the incremental active status of each staging site and to enable site specific interventions when needed. Appendix A includes an outline of what the CTMP should include to ensure the Project's construction transport effects are addressed.

The CTMP will confirm all temporary traffic management controls to be adopted and applied by the Contractor to ensure the safe and efficient transportation of all road users during the staged delivery and removal of construction plant / machinery, materials and staff during the establishment of the proposed sewer main. The CTMP will need to address any potential disruption to local businesses and/or residents including (but not necessarily limited to) potential temporary limits to traffic speeds, time limits for on-street parking, continued property access/egress, management of pedestrian facilities, and temporary alternative cycling route(s).

The final CTMP will also require the full review and approval by AT and NZTA as the road controlling authorities that manage the road corridors that are likely to be used by haulage vehicles. A copy of the CTMP should also be provided to Auckland Council for consent monitoring purposes.

With the implementation of these recommended provisions, the Project's construction traffic related effects can be effectively avoided, mitigated and remedied. Accordingly with the application of an approved CTMP and its active traffic management controls (designed in conjunction with the appointed Contractor); engagement with stakeholders and Road Controlling Authorities; the transport effects arising from the Project are not significant, will be temporary only, and can be effectively accommodated on the road network.

Appendix A: Construction Traffic Management Plan – recommended contents

- **Introduction:**
  - Purpose and Scope of the document:
  - Construction Traffic Management Plan Objectives (confirming the identification, mitigation, management and removal of construction traffic effects proactively before they arise and to the full satisfaction of NZTA and AT);
  - Project Description (including the various staging sites, their current access and egress arrangements);
  - Wider transport environment (description of the local transport conditions);
  - Roles and Responsibilities (including the Contractor's contractual obligations with Watercare);
  - Plan Review and Updates (confirming that the CTMP is developed as an open document and therefore subject to updates / change while the works progress. Regular reviews are therefore required with notifications to both Road Controlling Authorities (RCA) as needed); and
  - Site Specific Traffic Management Plan Approval Process (confirmation of the identification and mitigation of issues identified and the appropriate steps required to process these to gain RCA approval).
- **Project Activities**
  - Construction Methodology (confirm the intended approach to the works, any staging intended ensuring the minimal impact to the local road network and its users); and
  - Overview of planned works and proposed programme (confirmation of the works schedule, with priorities, planned sequencing, and any other key construction activities that need to be documented and covered by temporary traffic management controls).
- **Traffic Management Strategy**
  - Haulage routes (including sources of materials and spoil disposal sites);
  - Hours of operation (confirming working hours, weekend and/or holiday breaks);
  - Heavy Vehicle Delivery Hours (confirm vehicle sizes and operational hours);
  - Any exceptions to deliveries (confirm incidentals / other materials likely to be transported to or from the staging sites);
  - Site Attendance (confirm average daily staffing volumes);
  - Temporary parking controls (limiting / prohibiting on-street parking during haulage periods, the use of staff vans to minimise demands etc);
  - Temporary footpaths or cycling facilities (confirm where and how these will be sign posted, prepared and maintained during construction);
  - Public Transport (confirm any potential impact to bus services or infrastructure arising from planned construction activities and the approved mitigation to remedy any identified issues); and
  - Emergency Services (confirm what steps will be in place to ensure emergency vehicles have access on all haulage roads during construction).

- **Construction Access and Laydown**
  - Site access, construction / staff parking (for each site); and
  - Construction Vehicle Movements.
- **Communicating Traffic Management Effects**
  - Variable Message Signs (confirm if any variable messaging signs will be used, their operational messaging, way finding linkages and monitoring procedures);
  - Temporary Traffic Signal Controls (confirm if temporary traffic signal controls will be used, their operational phasing and monitory procedures);
  - Complaints (confirm how these will be captured, who will be responsible for their resolution and reporting mechanisms);
  - Response Procedure (confirm roles, responsibilities, procedures to be undertaken);
  - Incident Response (confirm how these will be captured, who will be responsible for their resolution and reporting mechanisms);
  - Communication protocols (these will be important to the success of the CTMP. This includes:
    - providing information to neighbours, stakeholders, receiving responses back, and communication with vehicle drivers associated with the project – both staff and subcontractors;
    - Specific contact arrangements will be made with adjoining occupants and/or landowners to contact the project team in a timely manner, as needed. Information, including scheduled events and the like will then be communicated with the traffic management team (within the appointed contractors organisation) and/or project drivers enabling them to anticipate the occurrence and actively manage the roadway and/or schedule their journeys as appropriate; and
    - Finally, the CTMP will record a list of people and organisations that the CTMP will be distributed to. All amendments and updates to the CTMP will then be forwarded to those named on the list).
- **Temporary Traffic Management Auditing** (confirm auditing sequence and by whom – independent assessor).
- **Monitoring and Reporting** The CTMP will provide a detailed schedule of the various elements of monitoring of the public roads. This will include:
  - Traffic generation levels;
  - Safety and effectiveness of temporary traffic management controls;
  - Extent of any delays caused during deliveries of plant / machinery or materials; and
  - Confirm level and frequency of reporting progress and any issues needing to be addressed).