Appendix L - Part 2

Contamination Impact Assessment

4.3 Geology

The study area is underlain by the following geologies shown on Figure 4-16 to Figure 4-20:

- Twib: Bringelly shale from the Wianamatta group, dating from the middle Triassic age. This geological unit is described as shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, rare coal and tuff (majority of the study area)
- Qav: Medium grained sand, clay and silt from the quaternary age (majority of Precinct 1, parts of Precinct 2)
- Qaf: Fine grained sand, silt and clay from the quaternary age (parts of Precincts 4 and 5).

The study area intercepts a lineament about 500 metres south of the approved M12 Motorway interchange.

The study area intercepts a fold for about 3.5 kilometres starting north of the Westlink M7 intersection with the Great Western Highway up to the Westlink M7 intersection with Woodstock Avenue to the north.

4.4 Hydrogeology

Porous, extensive aquifers of low to moderate productivity are mapped within the study area and surrounds. Groundwater is expected to exist as aquifers as:

- Unconfined to semi-confined alluvial aquifers associated with quaternary alluvium
- Likely within the Bringelly Shale, a semi-confined aquifer
- A confined aquifer within the Hawkesbury Sandstone which underlays the Bringelly Shale.

A total of 38 registered groundwater bores were located within one kilometre of the study area. All were registered for the purpose of monitoring with the exception of the following bores:

- GW102015: registered for groundwater dewatering in 1996 and located in a concrete plant property 184 metres south east of the study area (84 Jedda Road, Hoxton Park)
- GW018361: registered for disposal of aquaculture waste in 1961 (open through rock) and located 961 metres north west of the study area (now an aged care facility in Assunta Street, Rooty Hill)
- GW026226: registered for domestic general use in 1966 and located 181 metres north of the Westlink M7 in Cox Place, Glendenning (now an industrial park).

The standing water level (SWL) ranged between 2.6 metres and 34 metres below ground level (bgl). The details of each bore are listed in **Appendix B** along with bore details.

A geotechnical assessment completed for the existing Westlink M7 in 1998, indicated that shallow groundwater has historically been encountered at a minimum of 1.5metres bgl within the area between Abbotsbury Drive, Horsley Park, to the M4 Motorway, Eastern Creek (SKM & PPK, 2000).

High and moderate potential groundwater dependant ecosystems (GDEs) are mapped from the Bureau of Meteorology's GDE Atlas (BoM, 2021)in numerous areas adjacent and within the study area.

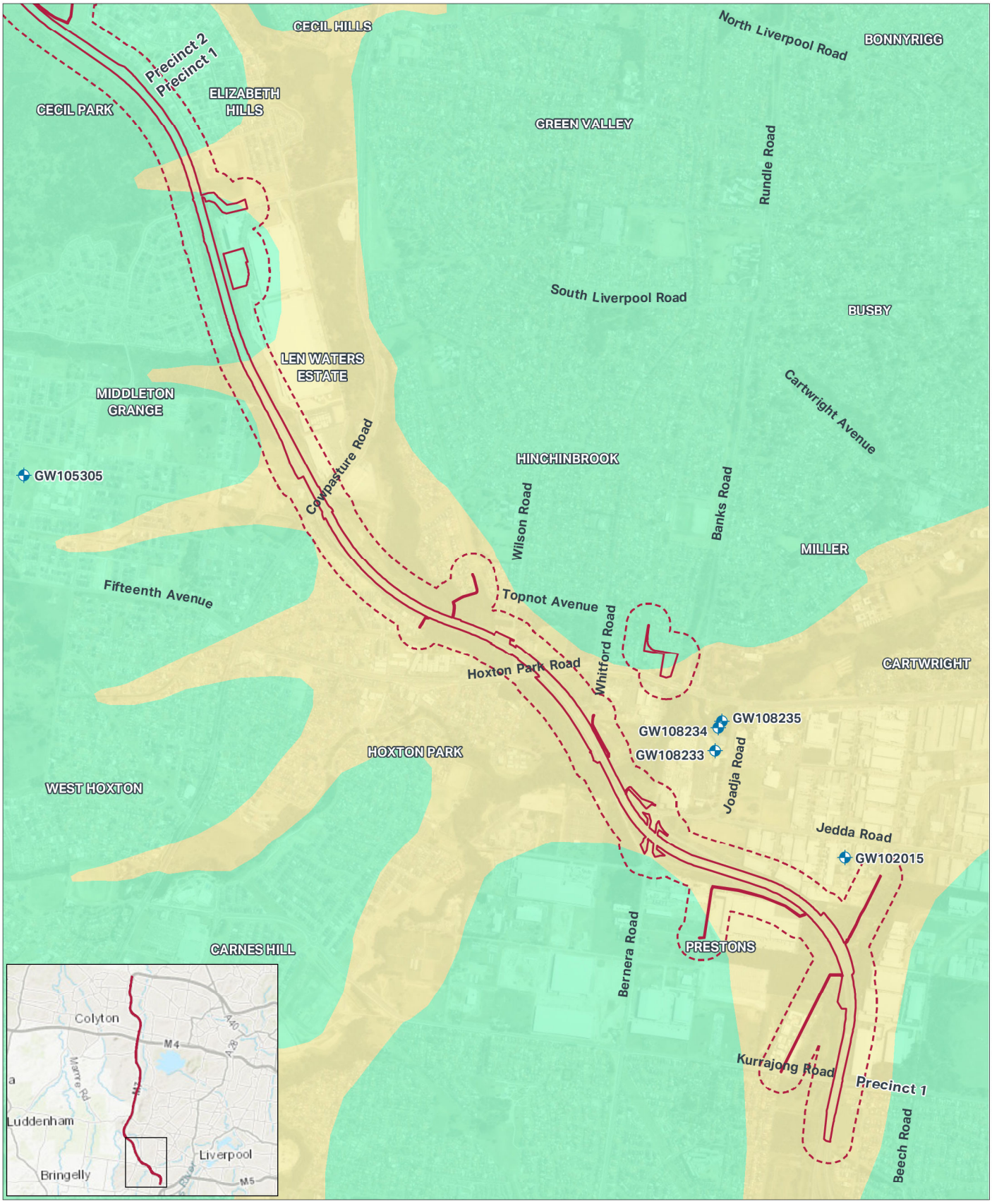


FIGURE 4-16: GEOLOGY ANND REGISTERED GROUNDWATER BORES WITHIN STUDY AREA (SHEET 1 OF 5)

N

0 400 800 m

AECOM

Legend

- Construction footprint
- Study area
- Registered groundwater bore

Seamless Geology

- Q_av
- Twib

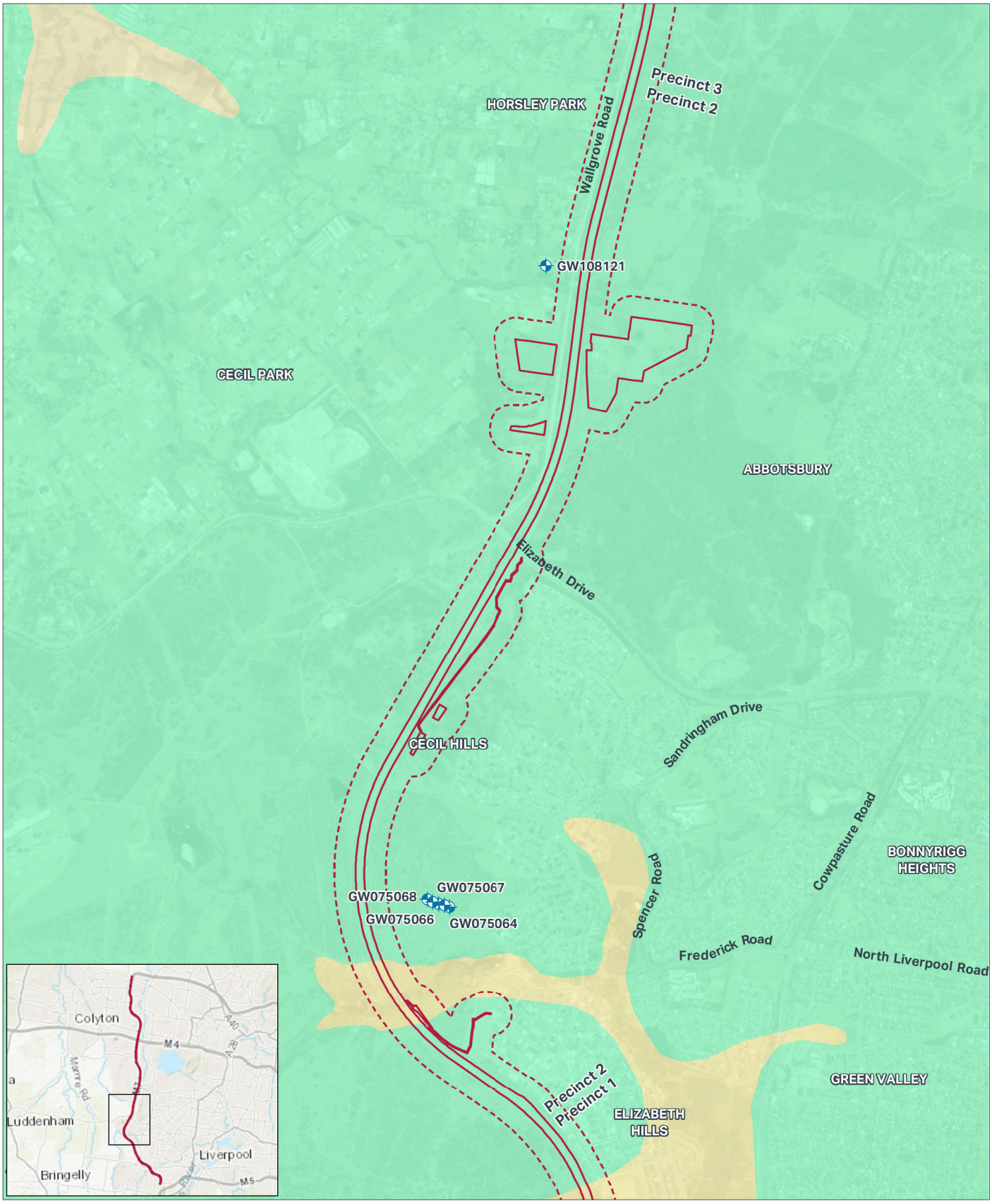


FIGURE 4-17: GEOLOGY ANND REGISTERED GROUNDWATER BORES WITHIN STUDY AREA (SHEET 2 OF 5)

N

0 400 800 m

AECOM

Legend

- Construction footprint
- Study area
- Registered groundwater bore

Seamless Geology

- CZ_a
- Q_af
- Q_av
- Twib

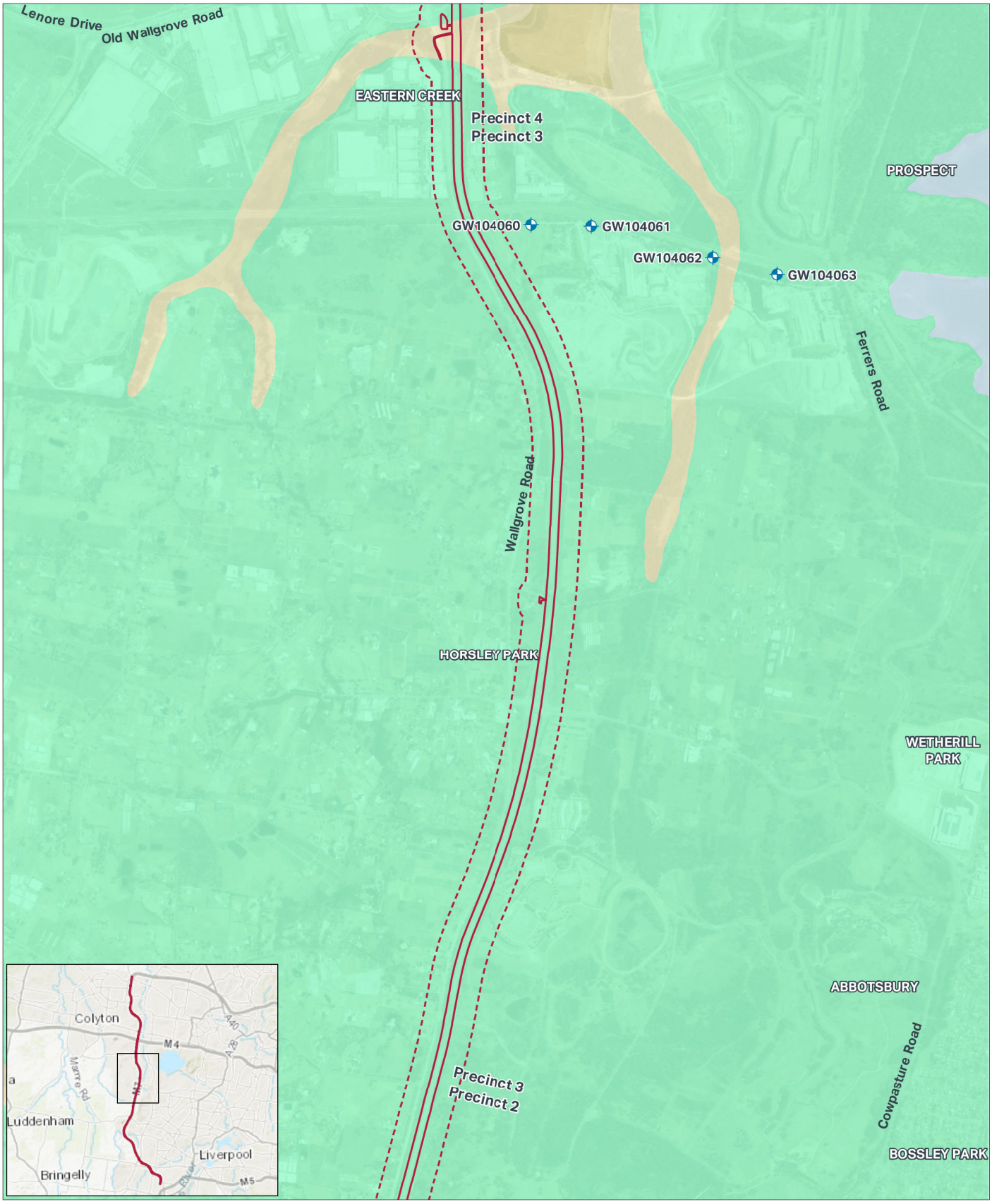


FIGURE 4-18: GEOLOGY ANND REGISTERED GROUNDWATER BORES WITHIN STUDY AREA (SHEET 3 OF 5)

N

0 400 800 m

AECOM

Legend

- Construction footprint
- Study area
- Registered groundwater bore

Seamless Geology

- QH_hf
- Q_af
- Q_hw
- Twib

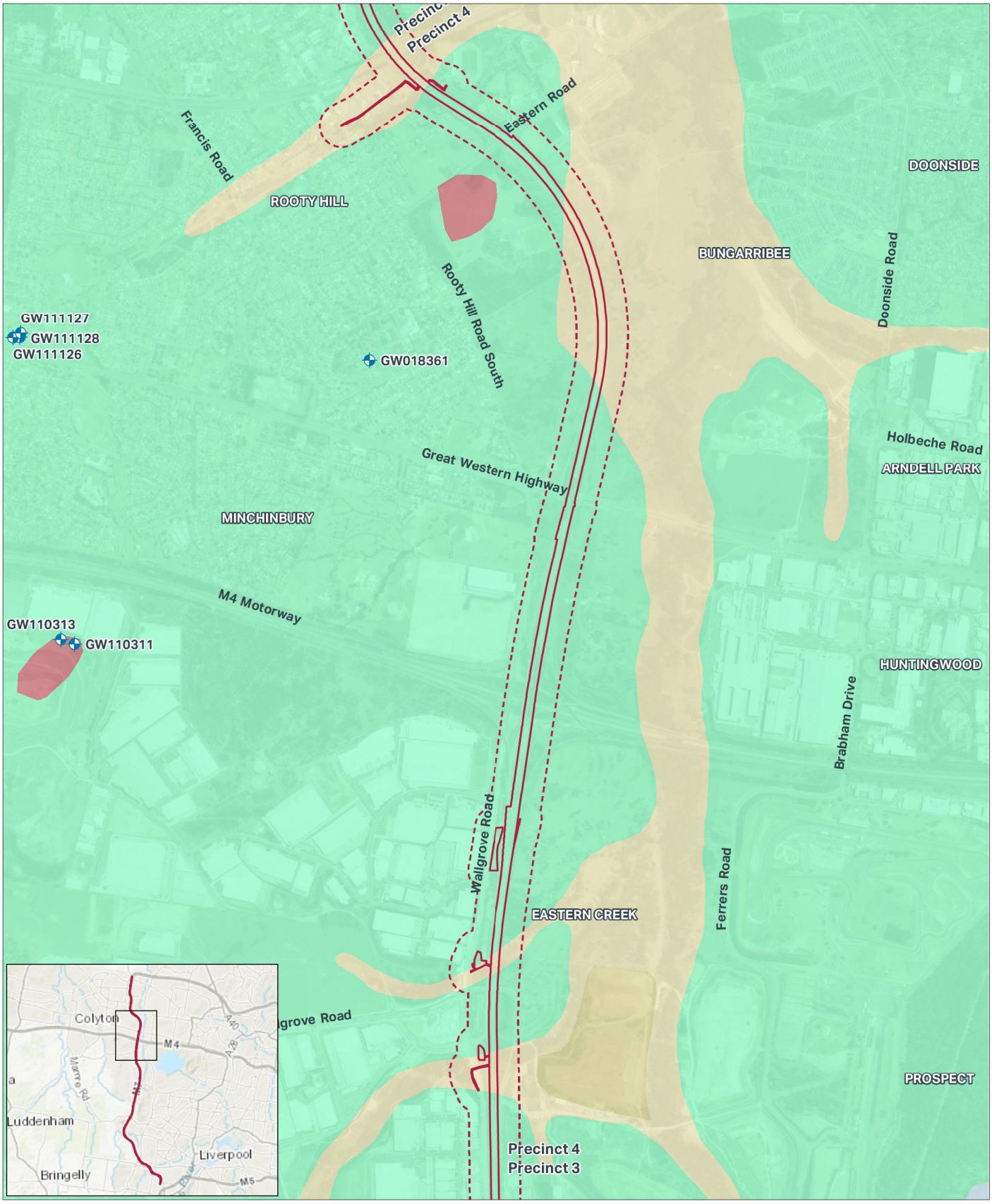


FIGURE 4-19: GEOLOGY ANND REGISTERED GROUNDWATER BORES WITHIN STUDY AREA (SHEET 4 OF 5)

N

0 400 800 m

AECOM

Legend

- Construction footprint
- Study area
- Registered groundwater bore

Seamless Geology

- QH_hf
- Q_af
- Q_hw
- MZui__v
- Twib

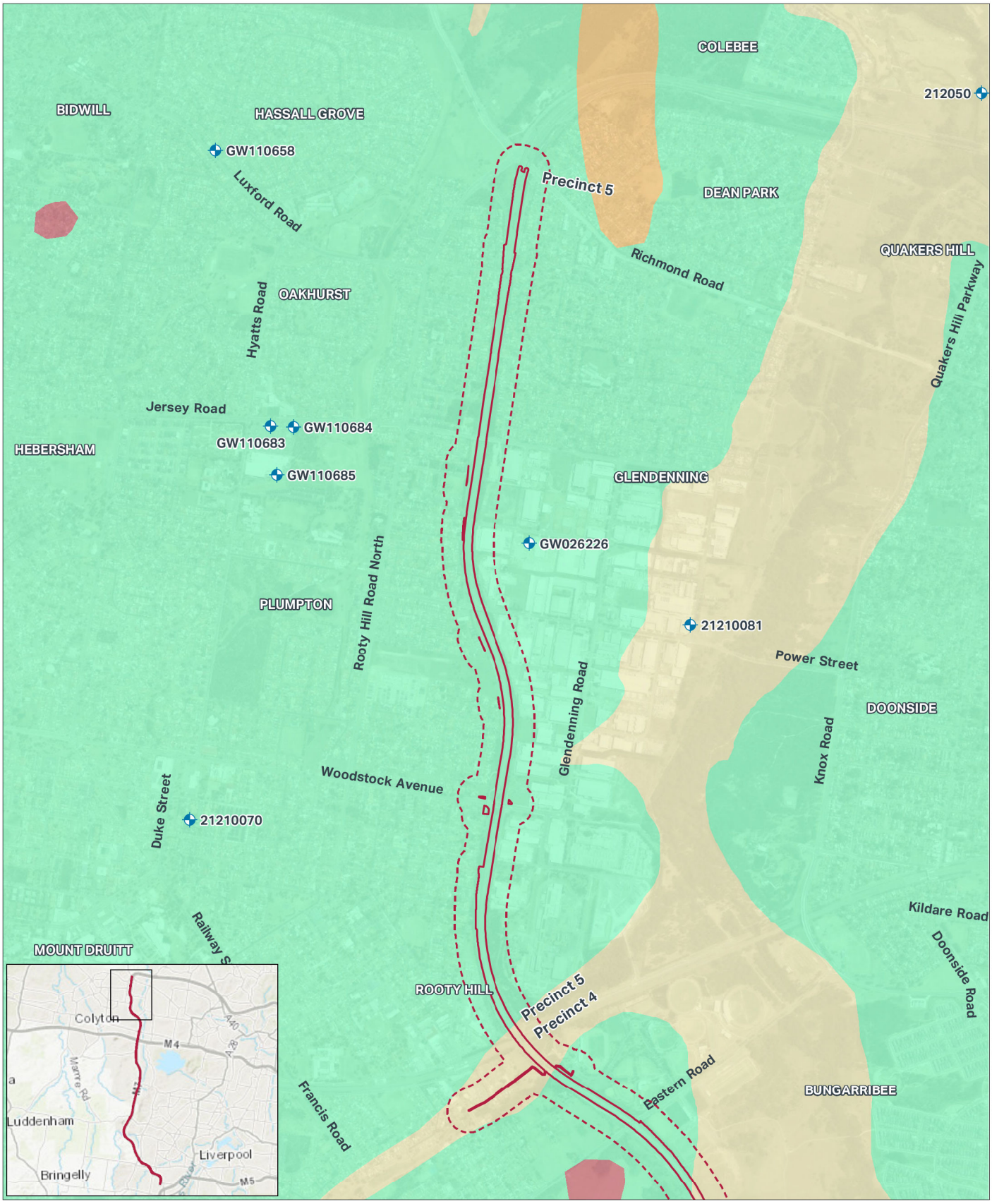


FIGURE 4-20: GEOLOGY ANND REGISTERED GROUNDWATER BORES WITHIN STUDY AREA (SHEET 5 OF 5)

N

0 400 800 m

AECOM

Legend

- Construction footprint
- Study area
- Registered groundwater bore

Seamless Geology

- G__s
- Q_af
- MZui__v
- Twib

Source: magery © Department of Customer Service 2020
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

4.5 Current land use

The land use zonings of the existing Westlink M7 and adjacent land uses within the study area are listed in Table 6 and shown on Figure 4-21 to Figure 4-25.

Table 6 Land use zones within and surrounding Westlink M7 in the study area

Precinct	Existing Westlink M7	Adjacent to the existing Westlink M7 and within the study area	Relevant LEP(s)
1 - Prestons to Elizabeth Hills	SP2 – Infrastructure (Westlink M7)	E2 – Environmental Conservation R2 – Low Density Residential RE1 – Public Recreation IN3 – Heavy Industrial IN1 - General Industrial IN2 - Light Industrial B5 – Business Development R1 – General Residential SP2 - Infrastructure (Cowpasture Road, as well as classified road south of Cowpasture Road) and for drainage	Liverpool Local Environmental Plan 2008
2 - Elizabeth Hills to Horsley Park including interchange with approved M12 Motorway	SP2 – Infrastructure (Westlink M7 and Elizabeth Drive)	RU1 - Primary Production R1 – General Residential R2 – Low Density Residential RE1 – Public Recreation RU4 – Primary Production Small Lots SP2 - Infrastructure (Wallgrove Road and Elizabeth Drive), as well as for drainage (north of Aviation Road). Approved M12 Motorway interchange at Elizabeth Drive extends within an unzoned area (Sydney Western Parklands), and within RU4 – Primary Production Small Lots on Cecil Road	Liverpool Local Environmental Plan 2008 (north of Elizabeth Drive) Fairfield Local Environmental Plan 2013 (south of Elizabeth Drive)

Precinct	Existing Westlink M7	Adjacent to the existing Westlink M7 and within the study area	Relevant LEP(s)
3 - Horsley Park to Eastern Creek	SP2 – Infrastructure (Westlink M7)	RU4 – Primary Production Small Lots IN1 - General Industrial (State Environmental Planning Policy (Western Sydney Employment Area)) SP2 - Infrastructure (Wallgrove Road)	Fairfield Local Environmental Plan 2013 Blacktown Local Environmental Plan Amendment (Western Sydney Employment Area) 2013 (north of the Precinct)
4 - Eastern Creek to Rooty Hill, including interchange with M4 Motorway	SP2 – Infrastructure (Westlink M7)	IN1 - General Industrial (State Environmental Planning Policy (Western Sydney Employment Area 2009) E2 - Environmental Conservation R2 – Low Density Residential RE1 - Public Recreation B1 – Neighbourhood Centre SP2 - Infrastructure (classified road and water supply system)	Blacktown Local Environmental Plan Amendment (Western Sydney Employment Area) 2013 (up to the Great Western Highway) Blacktown Local Environmental Plan 2015 (north of the Great Western Highway)
5 - Rooty Hill to Dean Park	SP2 – Infrastructure (Westlink M7)	R3 – Medium Density Residential R4 - High Density Residential R2 – Low Density Residential B2 – Local Centre SP2 - Infrastructure (classified road and rail corridor) RE1 – Public Recreation E2 - Environmental Conservation Area	Blacktown Local Environmental Plan 2015

Table 7 Land use zones for construction ancillary facilities

Ancillary facility name	Site address	Identifier	Site use	LGA	Zoning
Zone D-2	Hoxton Park Road, Hinchinbrook	Lot 1 DP 1083454	Vacant undeveloped lot	Liverpool	B1 – Neighbourhood Centre[1]
Zone A-2	20 Blackbird Close, Len Waters Estate 30 Blackbird Close, Len Waters Estate	Lot 402 DP 1141990 Lot 403 DP 1141990	Vacant and undeveloped	Liverpool	INI - General Industrial[1]
Zone A-3	Cowpasture Road, Elizabeth Hills Part Aviation Road	Part Lot 101 DP 1158385 /Aviation Road Reserve	Reserve for flood detention basin	Liverpool	SP2 - Drainage[1]

Notes: 1. Liverpool Local Environmental Plan (LEP) 2008, 2. State Environmental Planning Policy (Precincts - Western Parkland City) 2021, amended 2022, 3. Blacktown Local Environmental Plan 2015

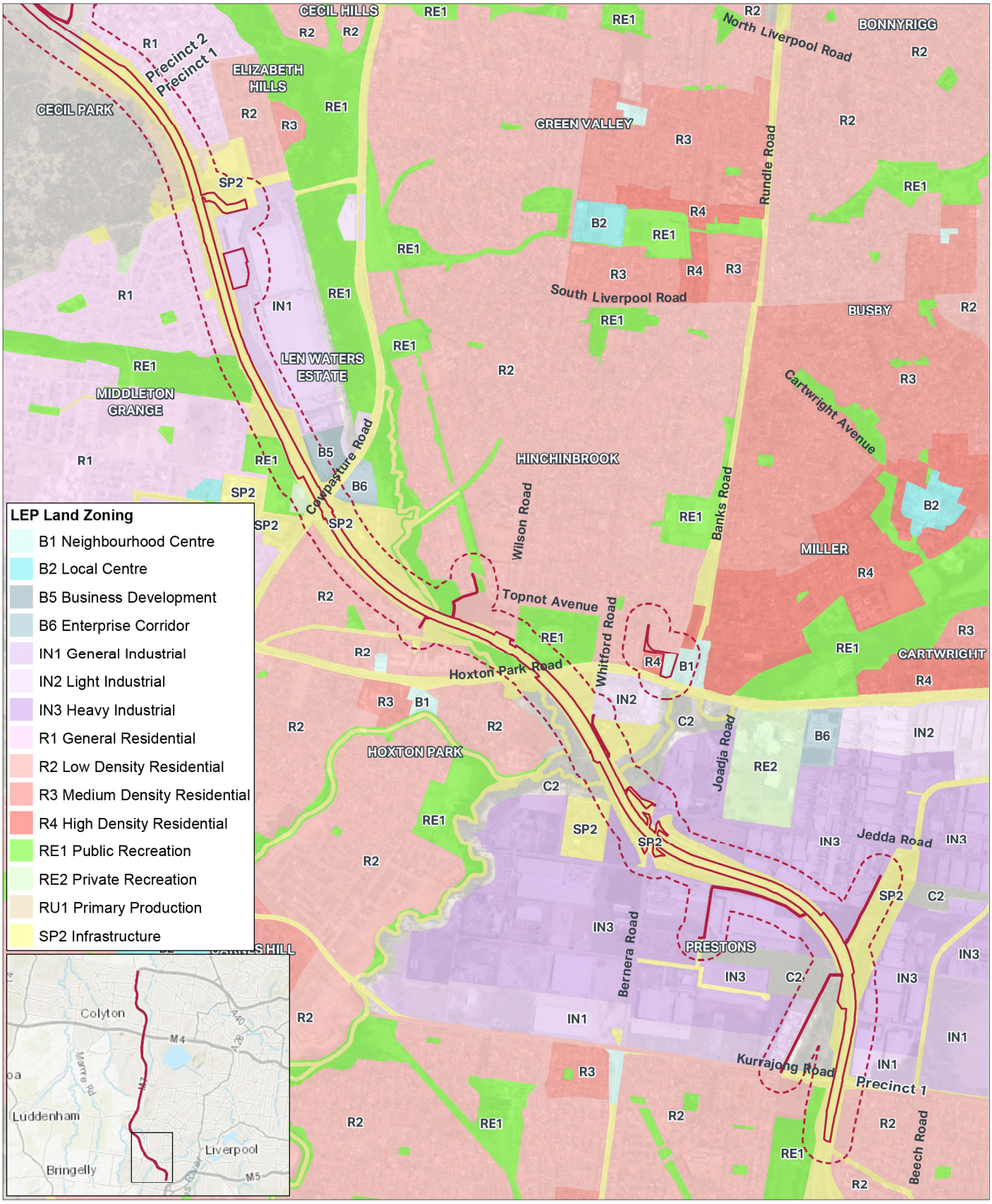


FIGURE 4-21: LAND USE ZONES WITHIN AND SURROUNDING STUDY AREA (SHEET 1 OF 5)

N 0 400 800 m

AECOM

Legend

Construction footprint

Study area

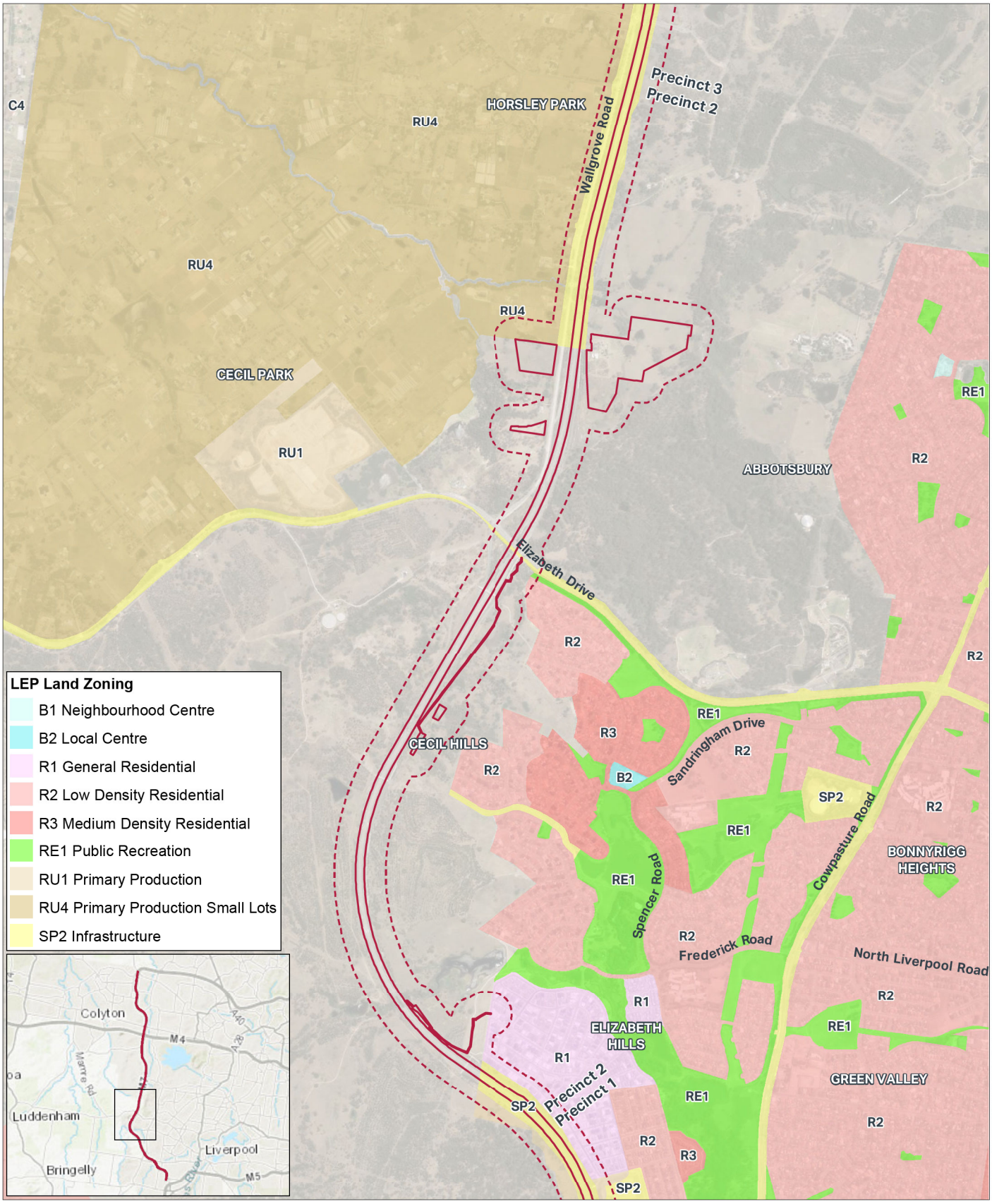


FIGURE 4-22: LAND USE ZONES WITHIN AND SURROUNDING STUDY AREA (SHEET 2 OF 5)

Legend

- Construction footprint
- Study area

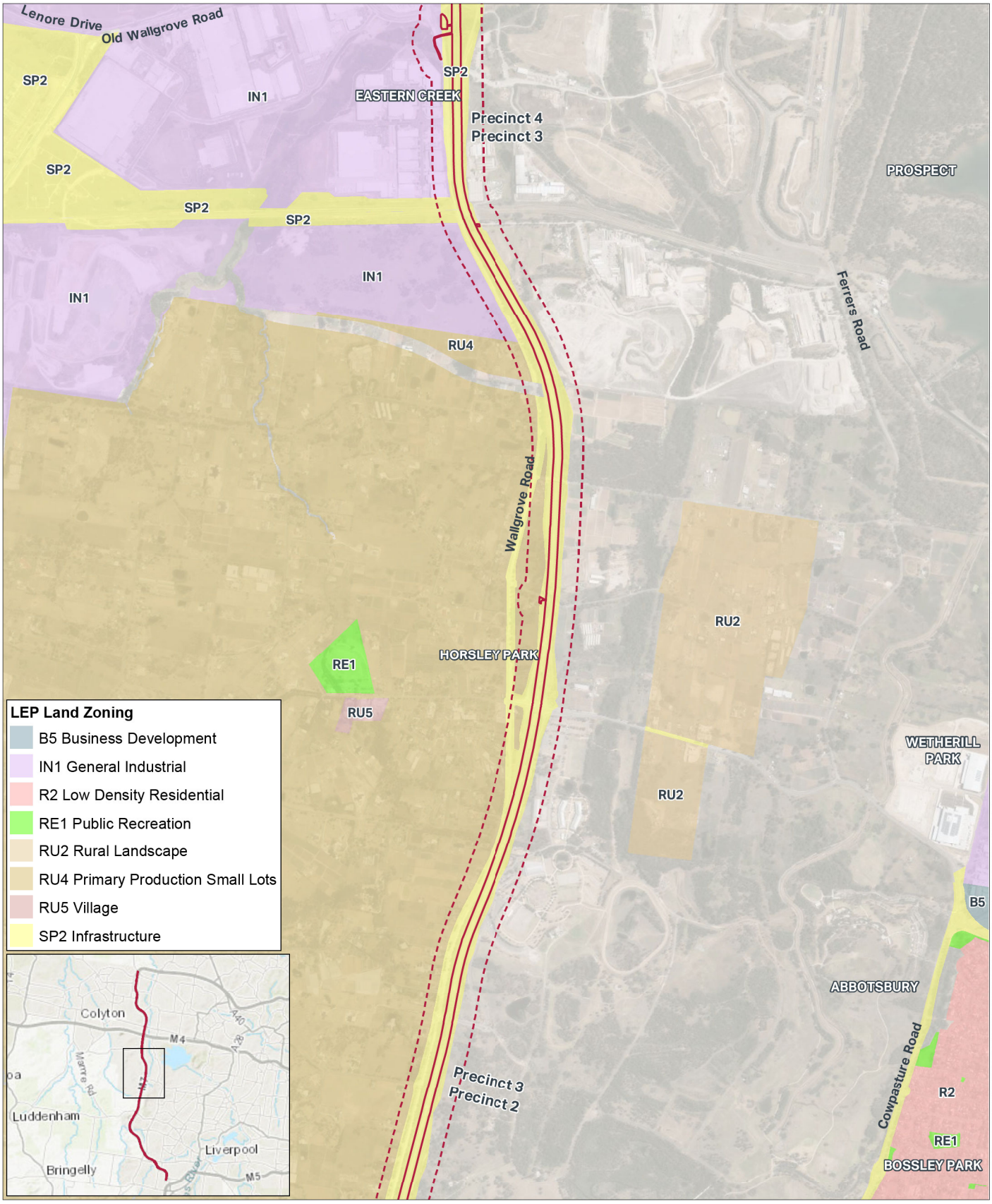


FIGURE 4-23: LAND USE ZONES WITHIN AND SURROUNDING STUDY AREA (SHEET 3 OF 5)

N 0 400 800 m

AECOM

Legend

Construction footprint

Study area

Source: imagery © Department of Customer Service 2020
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

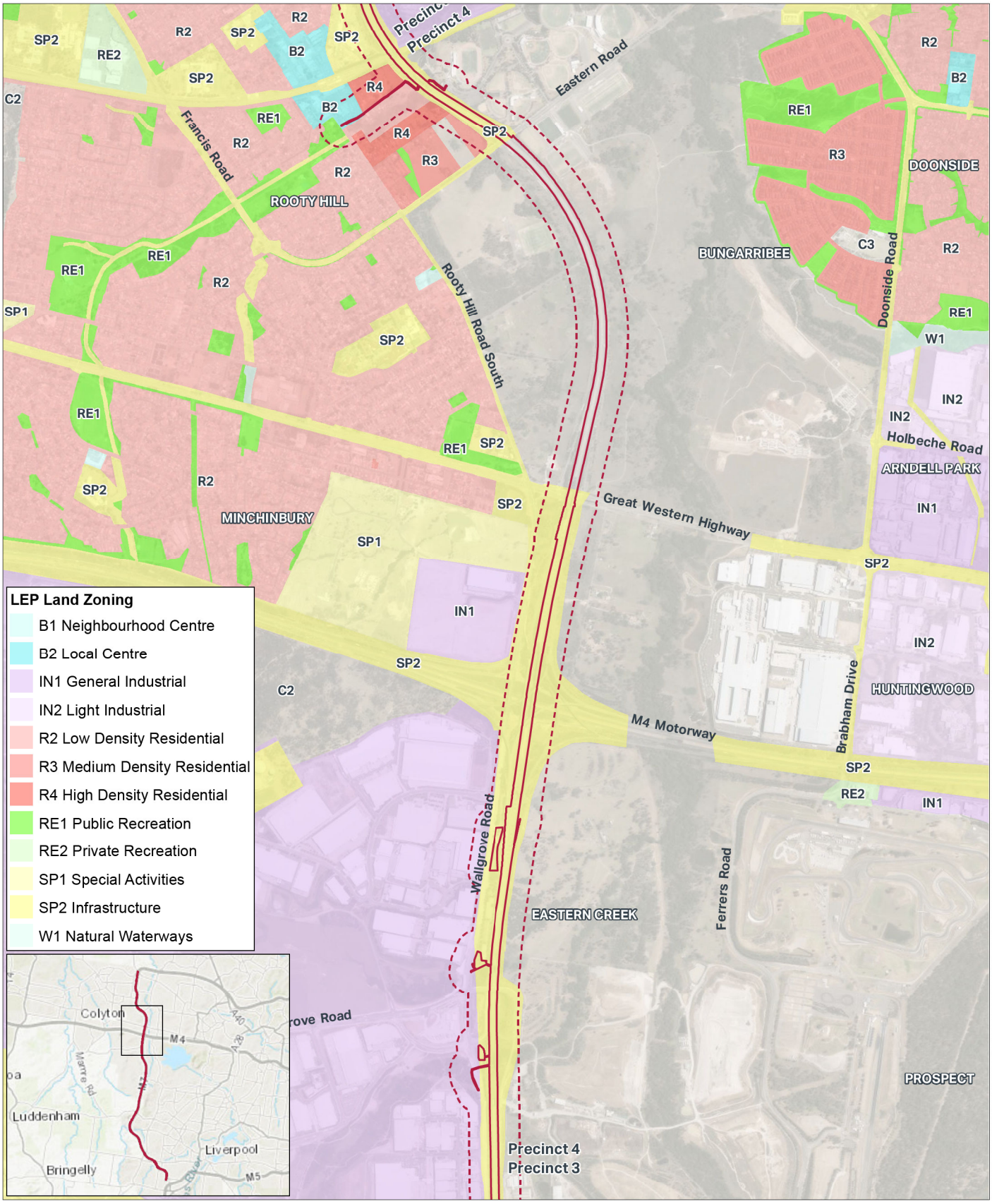


FIGURE 4-24: LAND USE ZONES WITHIN AND SURROUNDING STUDY AREA (SHEET 4 OF 5)

N 0 400 800 m

AECOM

Legend

Construction footprint

Study area

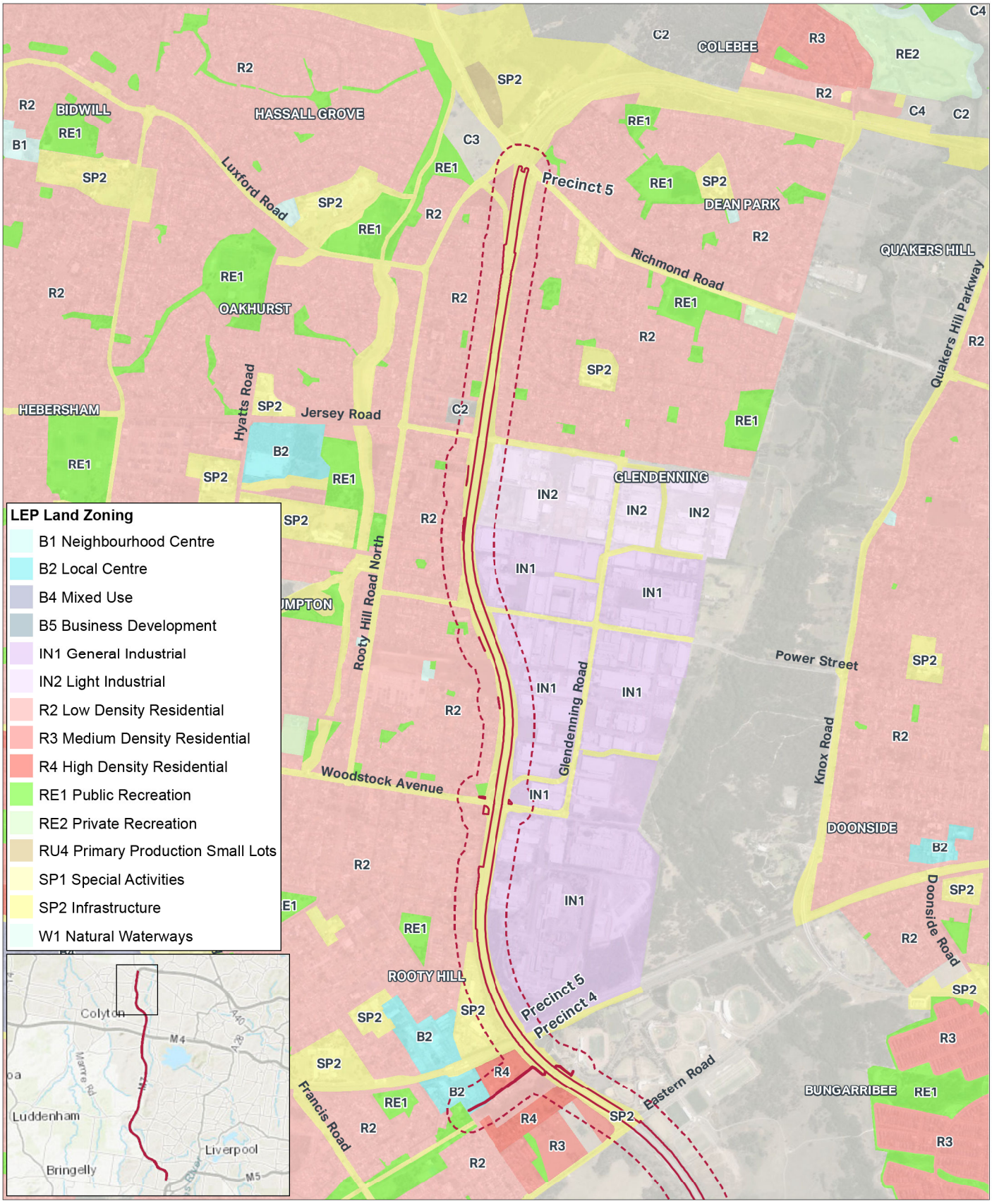


FIGURE 4-25: LAND USE ZONES WITHIN AND SURROUNDING STUDY AREA (SHEET 5 OF 5)

N

0 400 800 m

AECOM

Legend

Construction footprint

Study area

4.6 Current potential contaminating activities

Existing land uses in the local area which undertake potentially contaminating activities include service stations, agriculture, workshops and industrial manufacturing sites as well as waste management facilities. The sites within 100 metres of the study area are listed in Table 8 and shown on Figure 4-26 to Figure 4-41.

Table 8 Current potentially contaminating land uses within 100 metres of study area

Precinct	Site name address	Land use/activity
1	Endeavour Energy Hoxton Park (490 Hoxton Park Road, Hoxton Park)	Industrial, energy generation and storage facility
	Boral Cement Limited (10 Bernera Road, Prestons)	Cement or lime manufacturing
	Mainfreight Distribution Pty Ltd (30-50 Yarrawa Street, Prestons)	Chemical storage
	State Asphalt Pty Ltd (65-75 Yarrawa Street, Prestons)	Waste storage and recovery
	BP Service Station (505 Cowpasture Road, Prestons)	Operational petrol station
2	None within 100 metres of the study area	N/A
3	The Austral Brick Co Pty Ltd (738-780 Wallgrove Road, Horsley Park)	Brick manufacturing
	Veolia Environmental Services Pty Ltd (Wallgrove Road, Horsley Park) this is part of Horsley Park Waste Management Facility	Waste storage, waste treatment and recovery, composting, waste disposal (landfill)
	Caltex Horsley Park (1768 Horsley Drive, Horsley Park)	Operational petrol station
4	Veolia Environmental Services Pty Ltd and SUEZ Recycling and Recovery: both are part of waste assets management corporation (Eastern Creek Waste Management Centre, Wallgrove Road, Eastern Creek	Waste storage and recycling (Landfill), composting
	Aluminium specialties group (3 Alspec Place, Eastern Creek)	Metal waste generation
	BP Truck Stop (1 Wallgrove Road, Eastern Creek)	Petrol station
5	Infrabuild NSW Pty Ltd (formerly OneSteel NSW Pty Ltd) (22 Kellogg Road, Rooty Hill)	Industrial, steel manufacturing and mining
	Infra (200 Power Street, Glendenning)	Cement and lime manufacturing
	Sydney Trains (near Rooty Hill train station)	Railway systems activities
	NSW Rural Fire Service (2 Enterprise Drive, Glendenning	Fire station/depot

4.7 Historical aerial photograph review

Historical aerial photographs were also reviewed to identify other potential contamination sources from prior landuses within the study area not previously identified in searches. Findings of the review are listed in Table 9 for the Westlink M7 and Table 10 for the proposed construction ancillary facilities located outside of the Westlink M7. Key features observed from the historical aerials are shown on Figure 4-26 to Figure 4-41.

Table 9 Historical land use – historical aerial review – Westlink M7

Precinct	Description
1	The Westlink M7 is visible in the 2009 aerial imagery. Historical land uses prior to the construction of the Westlink M7 include farming and rural residential with former building structures. Filling may have occurred historically in parts of the Westlink M7 in the vicinity of surface water bodies such as Cabramatta and Hinchinbrook Creeks and tributaries (north of Cowpasture Road intersection, north Hoxton Park intersection, and north of Bernera Road intersection), as well as Maxwell Creek (north of Kurrajong Road). Former cut and fill is likely to have occurred in areas associated with road intersections constructed in the past. These areas include Cowpasture Road, Hoxton Park Road, Bernera Road, and Kurrajong Road. Endeavour Energy site with associated substation in Hoxton Park has occurred since the 1970's. Quarry and disturbed ground are visible in this area also between 1991 and 2009. The industrial area has generally developed post-2000. A former runway is visible in the 1949 aerial, north east of the intersection with Cowpasture Road (north of the Precinct). This has been redeveloped into an industrial precinct (warehouses) circa-2014. No other major former industrial land uses (prior to the Westlink M7 construction) were identified within this precinct of the study area. Existing industrial land adjoin the Westlink M7 to the north east and south of Cowpasture Road, as well as between Bernera and Kurrajong Roads (on both sides of the study area).
2	The Westlink M7 is visible in the 2009 aerial imagery. Elizabeth Drive and Wallgrove Road north of Elizabeth Drive are visible in the 1949 aerial. Historical land uses prior to the construction of the Westlink M7 include farming and rural residential, with former building structures. Various water bodies are visible and historical filling may have occurred in parts of the intercepting water courses. The northern extent of the former runway is visible in the 1949 aerial north east of the intersection with Cowpasture Road (south of the Precinct). A water course appears to drain from the runway towards the west and intercepts the current Westlink M7. Historical contamination from the runway may have migrated and be present in this area. Former tracks and road, as well as building structures, are present in the vicinity of the approved M12 Motorway interchange, north of Elizabeth Drive. The upper canal system (across the approved M12 Motorway interchange) is visible in the 1949 aerial. Historical cut/fill is likely in this area. The approved M12 Motorway interchange remained undeveloped, with the exception of some farming building structures near the intersection between the two existing roads, as well as the industrial area north of Elizabeth Drive. The quarry is visible in the 1982 aerial photograph. Residential areas have developed since the 2000s.

Precinct	Description
3	The Westlink M7 is visible in the 2009 aerial imagery. Wallgrove Road is visible in the 1949 aerial, as well as roads intercepting Wallgrove Road. Wallgrove Road runs parallel to the current Westlink M7, and traverses what appears to be productive farm land (crops), with numerous building structures and farm dams. Historical filling and buried waste material may be present within the current Westlink M7 footprint. Areas of historical cut/fill may have occurred at road intersections within the current Westlink M7. The brick quarry is visible in the 1961 aerial. The waste facility (landfill) is visible in the 1970 aerial. The drainage line north of the Precinct (between Precincts 3 and 4) is visible in the 1949 aerial. Since this feature intercepts the current Westlink M7, historical filling is likely to have occurred.
4	The Westlink M7 is visible in the 2009 aerial imagery. Wallgrove Road is visible in the 1949 aerial, as well as Old Wallgrove Road, which intercepts Wallgrove Road. Former structures and farm dams are present at this intersection, and historical cut/fill may have occurred at the current Old Wallgrove Road interchange. North of the junction between these roads, disturbed ground and many structures of similar rectangular shapes are visible in the 1949 aerial until the 1970s. Buried building waste may be present in this area. A road within the footprint of the current Great Western Highway is visible in the 1949 aerial. Land near and north of the intersection was historically used as farmland with various building structures. A former army camp is visible in the 1949 aerial, located adjacent and east of Wallgrove Road. The camp included living quarters and training facilities. The drainage line south of the Precinct (between Precincts 3 and 4) is visible in the 1949 aerial. Since this feature intercepts the current Westlink M7 footprint, historical filling is likely to have occurred. Disturbed ground and a quarry are visible west of the Old Wallgrove Road interchange from 1970 until the area was redeveloped into an industrial precinct with warehouses circa-2009. The quarry east of the Old Wallgrove Road interchange is visible since 1991 aerial and has expanded since to become the waste management facility as of 2020. Prior to the construction of the Westlink M7, former building structures are visible since 1961 north of the drainage line (south of the Precinct). Buried building waste may be present in this area. Industrial precincts have been established since 2009 and have increased since.
5	The Westlink M7 is visible in the 2009 aerial imagery. The railway is visible in the 1949 aerial, and disturbed land is visible within the footprint of the current Westlink M7 footprint, south of the railway. Prior to the construction of the Westlink M7, historical land uses included farmland and rural residential with building structures and farm dams. Historical filling as well as demolished buildings may be present within the Westlink M7 footprint. Construction of low and medium density residential areas have intensified near the railway line since 1982. Industrial buildings are first visible in the 1982 aerial, north of the railway. The steel manufacturing site is visible in the 1991 aerial. The industrial area has expanded since.

Table 10 Historical land use – historical aerial review – land outside Westlink M7 within study area

Ancillary facility name	Site address	Description
Zone D-2	345 Hoxton Park Road, Hinchinbrook (Lot 1 in DP 1083454, located on eastern side of 355 Hoxton Park Road)	In 1949 and 1955 the land appeared to be part of grazier land with no other visible features. In the 1961 aerial imagery the land appeared to be market gardens. From 1970 to 1991 the land appeared to be pastured paddocks. The surrounding land use was rural until a factory was constructed to the south of Hoxton Park Road by 1970. Since 2009 the land appeared to be used on and off as a construction compound for storage of construction materials and spoil. The 2021 aerial imagery showed the land was vacant with a mostly gravel surface.

Ancillary facility name	Site address	Description
Zone A-2	20 Blackbird Close, Len Waters Estate 30 Blackbird Close, Len Waters Estate	Between 1949 and 1991 the land was pastured land within Hoxton Park Airport, located about 100 metres west of the taxi way and 100 metres north of the main airport hangar and terminal area. There was also an erosional gully located along and within the southern boundary of the land which appears to have been filled in when the airport was redeveloped into part of Len Waters Estate in the late 2000s. The land has remained vacant in subsequent aerial imagery.
Zone A-3	Cowpasture Road, Elizabeth Hills Part Aviation Road	Between 1949 and 1991 the land was pasture within Hoxton Park Airport, located about 80 metres west of the taxi way and runway. The land was developed as Aviation Road between 2009 and 2014. A flood detention basin/reserve was also constructed on the northern side of this land.

4.8 Historical maps and other information

Historical topographic maps from 1929, 1942, 1975 and 2015 of the study area were reviewed. The 1929 to 1975 historical maps generally showed rural roads, scattered buildings, agricultural land, reserves and creeks within the study area during those time periods. The 2015 map showed the Westlink M7 and urban and industrial development similar to the present day. Other specific observations for each precinct are listed in Table 11.

Table 11 Historical land use – historical maps and other information – study area

Precinct	Description
1	The 1975 and 2015 map showed Hoxton Park Aerodrome between the Westlink M7 and Cowpasture Road and Liverpool Showground on the eastern side of the Westlink M7.
2	The 1942 map showed the Cecil Hills Tunnel (subterranean aqueduct channel) intersecting Elizabeth Drive in a northeast-southwest alignment. The 1975 map showed a brickworks on the northern side of Elizabeth Drive, west of Cecil Road in Cecil Park.
3	The 1975 map showed a brickworks (now Austral Bricks) east of the Westlink M7 on the southern side of the Warragamba pipelines.
4	No major features other than roads, scattered buildings, reserves and creeks within the study area.
5	In 1929 and 1942 Woodstock Coursing (greyhound track and large agricultural property) was located between Woodstock Avenue and Power Street in Plumpton.

4.9 Historical businesses

The UBD business listings provided in the Lotsearch reports were reviewed for the study area. Records of businesses with potentially contaminating activities and located within 150 metres of the study area are listed in Table 12 and shown on Figure 4-26 to Figure 4-41.

Table 12 Historical land use – UBD business directory records for the study area

Precinct	Record
1	• Pipe and/or pipe fittings manufacturer and/or distributor (1986-1991) – adjoining the Westlink M7, about 500 metres north of Kurrajong Road. • Hoxton Park Service Station (1961-1970), adjoining the Westlink M7, at intersection with Hoxton Park Road (not identified in historical aerials near study area).
2	• Road transport and courier services (1986), located within the approved M12 Motorway interchange area, on Elizabeth Drive.
3	• Bricklayers (1982) within the Westlink M7, at intersection with The Horsley Drive.
4	• Grocers, retail (1950), adjoining the Westlink M7, at Old Wallgrove Road interchange. • Paving contractors, asphalt, bitumen products, motor service station, mixed businesses (1950-1991), within the Westlink M7, at intersection with The Great Western Highway.
5	• Fuel merchants, coal, coke and wood, foundry supplies and machinery, (1950-1970), at Mavis Street, 50 metres west of the Westlink M7. • Crane manufacturer, squash court (1970-1986), 50 metres west of the Westlink M7, between Rooty Hill train station and the Westlink M7. • Cluster of historical businesses including machinery manufacturers, tile, roofing and insulation material manufacturers, building suppliers (1986-1991), waste disposal and management, sewage treatment plant (1991), at Kellogg Road up to Woodstock Avenue, adjoining the Westlink M7 to the east. • Poultry Dealers (1982-1986), within the Westlink M7, at intersection with Power Street. • Truck and/or bus repairs (1991), within the Westlink M7, near Richmond Road. • Motor garage and service stations, motor painter, fertilisers manufacturers (1970-1991), at Richmond Road (no specific address).

4.10 Previous investigations

A summary of previous investigations that were undertaken for the construction of the existing Westlink M7, and were considered relevant to the proposed modification, are summarised below.

Abigroup Leighton Joint Venture (ALJA), 2003, Results of additional fill assessment in the vicinity of Jedda Road Prestons, Plumpton Road Plumpton an assessment of the Valspar chemical site, Power Street Plumpton, NSW, 11 September 2003 (Draft).

Site inspections and soil sampling was conducted in August 2003 within the road reserve between Plumpton Road and Lamb Street, Plumpton; land formerly owned by Valspar Chemical in Plumpton; and within the vicinity of Jedda Road, Prestons. The objectives of the works were to assess whether past site activities had introduced chemicals of concern to the site and whether fill material on each site was locally derived or whether imported fill material had the potential to introduce contamination to the site. Appendices including figures of test pit locations and laboratory reports, were not attached to the available report and therefore the following concluding statements cannot be validated.

- **Plumpton Road, Plumpton (Lot 2 DP 1033513 and Lot 12 DP 588914)** – The site is located adjacent and west of the existing Independent Cement and Lime Pty Ltd in Precinct 5, which is currently where the existing Westlink M7 is located. The site was formerly used for market gardening and contained piles of dumped waste material. The site inspection in 2003 had confirmed that the waste material had been removed from site. It was observed that natural soil

had been exposed across the site with the exception of two stockpiles; a small pile of fill (approximately 1 m^3) present in the south east corner of Lot 2 DP 1033513; and a large pile of fill (approximately 50 m^3) containing soil and dumped surficial rubbish (scrap metal, concrete, wood, plastic, glass and brick) present in Lot 12 DP 588914. Both stockpiles were sampled (test pit or surface soils samples) and it was reported that the material did not pose an environmental or human health risk. An additional test pit was excavated in the western portion of Lot 12 DP 588914 to identify whether fill material was present beneath observed surficial broken glass and tiles. Natural material was identified at 0.5 metres bgl under the broken glass and tiles. The site was considered suitable for the proposed construction of the existing Westlink M7.

- **Valspar Chemicals, Plumpton (Lot 32 DP 701451 and Lot3 DP 1023181)** – The Valspar Chemicals site was formerly owned by Valspar Chemicals Pty Ltd who used the site for the production and storage of chemicals. The Valspar Chemicals site is now incorporated into the footprint of the existing Westlink M7, adjacent to the current Valspar Chemicals Pty Ltd operation in Precinct 5. A site inspection in 2003 indicated that it did not appear that any manufacturing and/or storage of chemicals had been undertaken within the portion of the site where construction works were to be completed for the existing Westlink M7. Visual observation of the site indicated that there was little potential for impact to the subsurface from site activities as the site was covered by concrete in all storage/manufacturing areas, and the concrete and seals between slabs were in good condition. Five test pits were undertaken between the storage/manufacturing area of the site and the construction footprint of the existing Westlink M7 to assess if any contaminants of potential concern (CoPCs) had migrated west of storage/manufacturing area. Migration to the west is however considered unlikely as the existing Westlink M7 is upgradient of the storage/manufacturing area of the site. It was reported that there were no observed or perceivable impacts by CoPCs from Valspar Chemicals site activities and the site was considered suitable for construction purposes.
- **Jedda Road, Prestons (Lot 2 DP 503989, Lot 13 DP 7326, Lot 14 DP 1016326 and Lot 12 DP 1016326)** – A site inspection in 2003 indicated that this site was covered with approximately 2.2-3.0 metres of fill material of unknown origin which contained glass, bricks, concrete, tiles, pavers, ash and coal wash. Samples collected from seven test pits had concentrations of CoPCs below the adopted guidelines and therefore it was reported that the site was considered suitable for construction purposes.

Abigroup Leighton Joint Venture (ALJA), 2003, Results of fill assessments undertaken along the route of the Western Sydney Orbital (M7), NSW, 14 August 2003 (Draft).

Site inspections and soil sampling was conducted in August 2003 at various locations along the construction footprint of the existing Westlink M7, to investigate the presence of contamination within fill material from unknown sources. Appendices, including figures of test pit locations and laboratory reports, were not attached to the available report and therefore the following concluding statements cannot be validated. Areas investigated include the grassed area south of the railway and east of the existing Westlink M7, adjacent to Angus Creek and the Blacktown International Sportspark Athletics Centre in Rooty Hill (Precinct 4); and an area of the existing Westlink M7, west of Lincoln Sentry in Prestons (Precinct 1). Other areas were investigated however the Lot and DP reported no longer exist and therefore the location of these areas are unknown. The report concluded that the soil excavated in Precinct 4 was either natural or had concentrations of CoPCs below the adopted guidelines; and Precinct 1 required further investigation based on observed extensive fill. It is unknown if further investigation was carried out in Precinct 1, however this area was a cut and fill section during construction of the existing Westlink M7.

4.11 NSW EPA record and notices

There were no sites listed on the NSW EPA record of notices for sites regulated under the CLM Act 1997 within 100 metres of the study area.

4.12 NSW EPA notified sites

Sites that were listed on the NSW EPA record of notified sites within 100 metres of the study area are detailed in Table 13 and shown on Figure 4-26 to Figure 4-41.

Table 13 NSW EPA Notified sites

Precinct	Site name and address	Description of notification	Proximity to the study area
1	Endeavour Energy Hoxton Park (490 Hoxton Park Road, Hoxton Park)	Listed on NSW EPA list of contaminated sites. Regulation under CLM Act not required.	About 100 metres east and downgradient of the study area
2	No records within 100 metres of the study area	N/A	N/A
3	No records within 100 metres of the study area	N/A	N/A
4	No records within 100 metres of the study area	N/A	N/A
5	Infrabuild NSW Pty Ltd (formerly OneSteel NSW Pty Ltd) (22 Kellogg Road, Rooty Hill)	Listed on NSW EPA list of contaminated sites. Regulation under CLM Act not required.	Adjoining the study area to the east (downgradient)

4.13 NSW EPA licenced and delicensed sites

Sites that are currently or have historically been licensed by the NSW EPA under the POEO Act within 100 metres of the study area are detailed in Table 14**.** A review of NSW EPA licensed sites provides an indication of where potentially contaminating activities may be occurring or have previously occurred, which could potentially impact the condition of soil and groundwater intercepted during the construction and operation of the proposed modification. These include waste management and liquid fuel facilities. Sites are shown on Figure 4-26 to Figure 4-41.

Table 14 NSW EPA licensed sites within 100 metres of the study area

Precinct	Site name and address	Description of licence	Proximity to the study area
1	Endeavour Energy Hoxton Park (490 Hoxton Park Road, Hoxton Park)	De-licenced activity, still regulated by the EPA for hazardous, industrial or 'Group A' waste generation or storage.	About 100 metres east of the study area (downgradient)
	Boral Cement Limited / Boral Resources Pty Ltd (10-12 Bernera Road, Prestons)	Licenced under the POEO Act for cement or lime handling. De-licenced activity, still regulated by the EPA for concrete works.	Adjoining the study area to the east
	Hanson Construction Materials Pty Ltd (106 Jedda Road, Prestons)	De-licenced activity still regulated by the EPA for concrete works	< 100 metres north of the study area (downgradient)

Precinct	Site name and address	Description of licence	Proximity to the study area
2	PGH Bricks and Pavers (Lot 7, Cecil Road, Cecil Park)	Licenced activity under the POEO Act for ceramic waste production, crushing, grinding or separating. Land based extractive activity, mining for minerals.	Adjoining the study area (north of Elizabeth Drive)
3	Veolia Environmental Services Pty Ltd (Wallgrove Road, Horsley Park)	Licenced activity under the POEO Act for composting, non-thermal treatment of general waste, waste disposal by application to land, recovery of general waste, waste storage - other types of waste (landfill).	Adjoining the study area to the east (Horsley Park Waste Management Facility)
	The Austral Brick Co Pty Ltd (738 – 780 Wallgrove Road, Horsley Park)	Licenced activity under the POEO Act for ceramic waste generation, ceramics production, crushing, grinding or separating, land based extractive activity, mining for minerals.	Adjoining the study area to the east
4	Waste Assets Management Corporation, Suez Recycling and Recovery Pty Ltd, Eastern Creek Operations Pty Ltd (all located on Wallgrove Road, Eastern Creek)	Licenced activity under the POEO Act for non-thermal treatment of general waste, waste disposal by application to land, composting, non-thermal treatment of general waste, recovery of general waste, waste storage - other types of waste (landfill).	Adjoining the study area to the east
	EDL LFG (NSW) Pty Ltd (Wallgrove Road, Eastern Creek)	Licenced activity under the POEO Act for generation of electrical power from gas.	Adjoining the study area to the east
	Aluminium Specialities Group Pty Ltd (3 Alspec Place, Eastern Creek)	Licenced activity under the POEO Act for metal waste generation.	< 100 metres west of the study area (upgradient)
	International Theme Park Pty Ltd (100 Wallgrove Road, Eastern Creek)	Surrendered licence (2001), for helicopter related activity.	< 100 metres west of the study area (upgradient)
5	Infrabuild NSW Pty Ltd (formerly OneSteel NSW Pty Ltd) (22 Kellogg Road, Rooty Hill)	Licenced activity under the POEO Act for chemical storage waste generation, crushing, grinding or separating, general chemicals storage, iron or steel production (scrap metal), metal processing, metal waste generation, non-thermal treatment of hazardous and other waste.	Adjoining the study area to the east (downgradient)
	Sydney Trains	Licenced activity under the POEO Act for railways systems activities.	Intercepting (within) the study area

Precinct	Site name and address	Description of licence	Proximity to the study area
	Independent Cement and Lime Pty Ltd (200 Power Street, Glendenning)	Licenced activity under the POEO Act for cement or lime handling.	< 100 metres east of the study area (downgradient)
	Hy-Tech Industries Pty Ltd (202 Power Street, Glendenning)	De-licenced activity still regulated by the EPA for concrete works.	< 100 metres east of the study area (downgradient)
	The Valspar Corporation Pty Ltd (203 Power Street Glendenning)	Surrendered licence (2000) for chemical production waste generation, paints/polished/adhesives production.	Adjoining the study area to the east (downgradient)
1 to 5	Acciona Infrastructure Projects Australia Pty Ltd	Surrendered licence (2003) for crushing, grinding or separating, road construction, concrete works; freeway or tollway construction.	Within study area, from connection with M5 Motorway at Camden Valley Way to connection with M2 Motorway at Baulkham Hills, Blacktown

4.14 National Waste Management site database

Waste management facilities located within 100 metres of the study area include:

- Eastern Creek Waste and Recycling Centre – operational facility owned by WSN Environmental Solutions, located at 29 Wallgrove Road, Eastern Creek
- Horsley Park Waste Management Facility - operational Landfill owned by Veolia Environmental Pty Ltd, located at 716-752 Wallgrove Road, Horsley Park.

The location of the facilities are shown on Figure 4-26 to Figure 4-41.

According to previous preliminary investigations at the Eastern Creek Waste and Recycling Centre (Environ, 2003 and EES, 2003) undertaken prior to the construction of the existing Westlink M7, the landfill cell within the Westlink M7 corridor was filled to a depth of approximately 10 to 15 metres bgl and covered with a 1.0 to 1.2 metre capping clay layer in the early 1990s. The proposed construction method for the existing Westlink M7 comprised the following:

- compaction of the landfill cell to improve the consistency of the capping layer to approximately two metres beyond the motorway fence so that if differential settlement provides pathways for gas escape, the gas would be outside the motorway boundary fence
- construction of the road above the landfill cell, with no excavation into the landfill cell
- no services trenches or other excavations were allowed beyond the compacted zone.

Reports indicate that landfill gas produced by the cell is extracted using a grid of negative pressure extraction points. It is unknown if the system has been maintained or modified since the investigations conducted in 2003.

4.15 Former gas works sites

No former gasworks were identified within 100 metres of the study area.

4.16 Potential PFAS source sites

4.16.1 NSW EPA investigation program

No sites under investigation as part of the NSW EPA PFAS investigation program were identified within the study area. The closest sites currently under investigation was the Kemps Creek NSW Rural Fire Service located 5.7 kilometres west of the study area (Precinct 1 at Len Waters Estate) at 245 Devonshire Road, Kemps Creek. The catchment in which the Kemps Creek NSW Rural Fire Service is located does not cross into the study area and is therefore not considered a potential source of PFAS contamination for the study area.

4.16.2 NSW Rural Fire Service and Fire and Rescue NSW sites

Foam containing PFAS was used by some NSW Rural Fire Brigades and Fire and Rescue NSW Brigades for firefighting activities, such as fuel type fires and training, since around 1975. The NSW Rural Fire Service (RFS), and Fire and Rescue NSW are progressively investigating their current and former sites across NSW. Sites currently under investigation listed on the NSW RFS website[2] and Fire and Rescue NSW website[3] as of 5 October 2021 and Fire and Rescue NSW sites are summarised in Table 15 along with sites not listed (identified by directory maps). The location of the sites within 500 metres of the study area are shown on Figure 4-26 to Figure 4-41.

Table 15 NSW RFS sites within 500 metres of the study area

Precinct	Site name and address	Description	Proximity to the study area
1	Casula RFS at 1 Maple Road, Casula	Not listed as currently under investigation on RFS website.	1.3 kilometres southwest, within same water catchment
	Former Austral RFS at 59 Ninth Avenue, Austral	An investigation has confirmed the presence of PFAS in some soil samples. A detailed site investigation is currently being undertaken to assess the extent of PFAS at the site and the improvement actions that will be required. There is currently no information on the extent of off-site impacts.	Five kilometres west, not within the same water catchment
	Hoxton Park RFS at 8-10 First Avenue, Hoxton Park	An investigation has confirmed the presence of PFAS in some soil samples. A detailed site investigation* is currently being undertaken to assess the extent of PFAS at the site and the improvement actions that will be required. There is currently no information on the extent of off-site impacts.	450 metres west and within same water catchment (Beard, Hinchinbrook and Cabramatta Creeks)
2	Kemps Creek Training Facility at 245 Devonshire Road, Kemps Creek	As stated in **Section 4.13**, the facility is under investigation as part of the NSW EPA investigation program. The catchment in which the Kemps Creek NSW Rural Fire Service is located does not cross into the study area and is therefore not considered a potential source of PFAS contamination for the study area.	5.7 kilometres west, not within the same water catchment

[2] https://www.rfs.nsw.gov.au/news-and-media/pfas-environmental-investigation

[3] https://www.fire.nsw.gov.au/page.php?id=9170

Precinct	Site name and address	Description	Proximity to the study area
	Kemps Creek RFS at 1662 Elizabeth Drive, Kemps Creek	Investigations found PFAS detections in surface soils at concentrations significantly below the guideline values for industrial/commercial land use and there were no off-site PFAS impacts.	Three kilometres west, not within the same water catchment
	Fire and Rescue NSW at 70 Gloucester Street, Bonnyrigg Heights	Not listed as currently under investigation on Fire and Rescue NSW website.	Two kilometres east, not within the same water catchment
3	Horsley Park RFS at Arundle Road and The Horsley Drive, Horsley Park	Not listed as currently under investigation on RFS website.	860 metres west, within Reedy Creek water catchment, although three kilometres upstream of Westlink M7 crossing)
4	Eastern Creek RFS at 204 Rooty Hill Road South, Eastern Creek	Not listed as currently under investigation on RFS website.	200 metres west, within same water catchment (Eastern Creek)
5	Plumpton RFS at 7 Florence Street, Oakhurst	Not listed as currently under investigation on RFS website.	200 metres west, and downgradient of the study area
	NSW RFS at 2 Enterprise Drive, Glendenning	Not listed as currently under investigation on RFS website.	50 metres east and up topographic gradient

** The NSW Environment Protection Authority is leading the NSW PFAS investigation program and is monitoring the progress of NSW RFS PFAS investigations.*

4.16.3 Other source sites

It is noted in **Section 4.20** that there have historically been vehicle fires along the road pavement and grass fires within the median strip and road shoulders of the existing Westlink M7. Specific locations of the fires or how the fires were extinguished are unknown. There is a potential that aqueous fire-fighting foams containing PFAS were used during these fire events.

4.17 Unexploded ordnance

The Department of Defence (Defence) identifies and maintains a record of sites affected, or suspected of being affected, by unexploded ordnance (UXO). The records are publicly available on Defence's website (https://www.whereisuxo.org.au/). A search of the records located no UXO recorded sites within the study area. The closest UXO site was a former WWII grenade range with a slight potential for UXO located directly adjacent to the study area, on the western side of the M4 Motorway/Westlink M7 interchange. The UXO area was also located near the former army camp, also of WWII era, observed within the study area in historical aerial photographs described in **Section 4.7**.
Based on the above, there is an unlikely chance of encountering UXO in the vicinity of the M4 Motorway/Westlink M7 Interchange and within the former army camp just south of the interchange (see Figure 4-36). There is a rare chance of encountering UXO in the remainder of the study area.

4.18 Asbestos

The asbestos register provided by the operators of Westlink M7 was reviewed for the study area. The register has records of known areas of illegal dumping and known asbestos impacts. The following was recorded:

- Precinct 1: 0.09 cubic metres of bonded asbestos (non-friable) – fibre cement on ground and in surface soils within the Westlink M7 at the base of the toll point 1 gantry, west of the noise wall, just north of Kurrajong Road (clearance certificate issued in 2018, no details provided).
- Precinct 1: 0.04 cubic metres of friable asbestos in soils – fibre cement and adjacent soil within the Westlink M7, adjacent east of the toll gantry on the Westlink M7 southbound exit ramp to Wallgrove Road. Exposed batter. No clearance certificate issued (no further information provided). In addition, it is noted that an asbestos pipe was identified in this area during test pitting works conducted by AECOM.
- Precinct 4: 0.01 cubic metres of friable asbestos in soils (no further description provided) located within the Westlink M7 on the eastern kerb side (southbound direction) near the M4 Motorway interchange, between the M4 Motorway overpass and the M4 Motorway southbound on ramp (clearance certificate issued in 2015, no details provided).

A targeted contamination investigation was conducted in 2019 at the proposed Light Horse Interchange Hub site which indicated that a fragment of bonded asbestos was observed within a soil stockpile at the former army camp (WWII) located within Precinct 4 (EES, 2019).

The locations are shown on Figure 4-26 to Figure 4-41.

4.19 Historical titles

Historical titles searches were obtained for three properties within the study area to identify past land uses where the land use was not clear or certain from other sources such as historical aerials and UBD records. The summary of historical titles and the historical aerial observations for each property are summarised in Table 16.

Based on the review, the Westlink M7 at Cecil Park (chainage 2251 to 2287) was potentially a metal works site, however the appearance of the sheds indicates it may have also been livestock and/or horticultural activity.

Table 16 Historical titles review for the study area

Area	Address and lot	Historical aerial review summary	Summary of historical titles ownership
Westlink M7 at Cecil Park north of ramps to approved M12 Motorway (chainage 2251 to 2287)	Westlink M7, Cecil Park, NSW 2178 Lot 3 DP 1041390	1949: Farm land 1961 to 1970: Market gardens 1970 to 1991: Part of a 1.6 ha area of sheds	1920 to 1945: Various farmers and a labourer 1947 to 1957: Market gardeners 1957 to 1995: Metal worker 1995 to 2002: Minister Administering the Environmental Planning and Assessment Act, 1979 2002 to date: Roads and Traffic Authority of New South Wales (now Transport)

4.20 Historical spills and fires

The following information gathered between 2013 to May 2022 was obtained for the existing Westlink M7 by the Safety, Environment and Stakeholder Manager for NorthWestern Roads:

- Vehicle fires have typically been confined to the road pavement.
- Grass fires have occurred within the median strip or road shoulders and were largely associated with cigarette butt disposal
- Vehicle crashes have resulted in petrol/diesel fuel spills. Spills occur on the pavement, where the fuel can flow through the stormwater system to sediment basins. The majority of the spills are contained to the road pavement area and cleaned according to procedures.

There is currently no available information regarding spills and fires along the existing Westlink M7 prior to 2013.

4.21 Potential areas and contaminants of concern

There is limited information regarding the construction of the existing Westlink M7, however it is expected that the construction works adhered to contemporary design and quality standards, which included the involvement of an Independent Certifier. Standard construction practices at the time were likely to have been conducted in accordance with a Construction Environmental Management Plan (CEMP) and an unexpected finds procedure is expected to have been followed to manage unidentified chemical or asbestos contamination.

The existing Westlink M7 intersected various sites which were formerly used for commercial/industrial and agricultural purposes. Previous investigations prior to the construction of the existing Westlink M7 (**Section 4.10**) indicated that site inspections and intrusive soil investigations were conducted at areas considered to be high risk of contamination from site activities. Not all reports for these investigations were obtained and available information was limited. It is unknown if identified contamination was remediated, however it is assumed that identified contaminated material was either discarded offsite to landfill or remains within the existing Westlink M7 corridor in isolated areas. There is anecdotal evidence that there is contaminated material capped under a mound at the M5 interchange, south of Precinct 1 and outside of the study area for this assessment.

No information has been obtained regarding the source of imported fill material for construction of the existing Westlink M7. It is assumed that imported fill material was either virgin excavated natural material (VENM) or excavated natural material (ENM), which would have been analysed to ensure the fill material met relevant guidelines and inspected prior to placement on the existing Westlink M7. It is assumed that fill material used was mainly sourced from other areas of the construction works and were mainly used in areas of embankments, bridge abutments, road levelling, and temporary realignment of water courses (where required) to facilitate the construction works.

In the following sections, the proposed modification has been assessed for potential for areas and contaminants of concern associated with the different types of construction and excavation activities across the proposed construction footprint.

4.21.1 Westlink M7 Median

It is assumed that the fill material in the median of the existing Westlink M7 is likely comprised of engineering fill material (select material zone (SMZ)), which would extend out from under the constructed pavement and into the median strip to some degree, and the remaining and central area of the median would likely comprise general fill material/topsoil sourced locally from construction works or imported fill material.

There is potential for isolated areas of contamination within the median from prior commercial/industrial and agricultural land use, including areas where buildings containing hazardous building materials (ACM and lead based paints) were demolished. A targeted, detailed site investigation along the median strip for the proposed modification commenced in June 2022. Preliminary information obtained from site observations and soil analytical results from investigations in early June has indicated no areas of concern for contamination in the areas investigated to date, however a large portion of the investigation was yet to be undertaken, and is programmed to be completed by mid-August 2022.

Based on the desktop review, source areas of potential contamination were identified within and surrounding the median of the Westlink M7, as summarised in Table 17. For each source area, CoPCs were identified, based on the source of potential contamination. Only sources or activities that are within, adjacent or topographically up-gradient and within 100 metres of the median of the Westlink M7 have been considered as potential areas and sources of contamination in this area. A likelihood for risk of contamination was then assigned for each source area. Areas of potential contamination are shown on Figure 4-26 to Figure 4-41.

Table 17 Potential source areas and contaminants of concern – Median of the Westlink M7

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
All Precincts			
Existing Westlink M7	Within the construction footprint	• Heavy metals, TRH, PAH and BTEX	Low – Standard emergency spill environmental safeguards were likely to have been implemented in the event of an accidental spill
Areas of former cut and fill associated with the construction of the Westlink M7	Within the construction footprint, especially at road intersections	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Low – based on the assumptions above. The median likely comprises engineering fill on the edges of the median and general fill material/topsoil sourced locally from construction works or imported fill within the central portion of the median.
Areas of former filling near interceptions with surface water bodies	Within the construction footprint – near surface water bodies	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Low – based on the assumptions above. The median likely comprises engineering fill on the edges of the median strip and general fill material/topsoil sourced locally from construction works or imported fill within the central portion of the median.
Former building structures	Within the construction footprint – various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Lead and PCBs	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1 and 4 and experience suggests the potential for contamination of lead and PCBs from hazardous building materials (HAZMAT)
Precinct 1			
Areas of disturbed terrain and potential illegal dumping	Within the construction footprint and median strip – various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides, herbicides	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1 and experience suggests the potential for contamination of heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides
Recorded illegal dumping	Within the construction footprint adjacent to the median strip, north of Kurrajong Road	• Asbestos (bonded asbestos in the form of ACM on ground and in surface soils)	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
Substation and electricity production facilities (Endeavour Energy)	Adjoining the study area to the east and west, near Bernera Road interchange	• PCBs, metals, TRH, PAH, BTEX • Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil)	Low - Listed on NSW EPA list of contaminated sites. Potentially impacted groundwater is unlikely to be encountered and source area is located outside the construction footprint
Precinct 2			
Former large-scale agricultural sheds	Within the construction footprint and median strip	• Heavy metal, TRH, PAH, BTEX, PCBs, herbicides and pesticides • Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil)	Moderate – No information is available, however experience suggests the potential for contamination
Potential illegal dumping	Within the construction footprint adjacent to median strip – various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides, herbicides	Moderate – Experience suggests the potential for contamination of heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides
Precinct 3			
Waste management facility	Within the construction footprint and median strip.	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Landfill leachate (Nutrients, Ammonia, Heavy metals, TRH, PAH, BTEX, PCBs, Phenols) • Impacted soil associated with the landfill (Heavy metals, TRH, PAH, BTEX, PCBs and Phenols) • Landfill gas • Potential PFAS	Moderate – No information is available, however there is potential for encountering landfill leachate and gases.

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
Areas of disturbed terrain	Within the construction footprint and median strip – various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides, herbicides	Moderate – Experience suggests the potential for contamination of heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides
Precinct 4			
Waste management facility	Within the construction footprint and median strip.	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Landfill leachate (Nutrients, Ammonia, Heavy metals, TRH, PAH, BTEX, PCBs, Phenols) • Impacted soil associated with the landfill (Heavy metals, TRH, PAH, BTEX, PCBs and Phenols) • Landfill gas • Potential PFAS	High – No information is available, however experience suggests the potential for contamination as a result of migration of leachate from the landfill
Former building structures, disturbed ground, potential buried waste	Within the construction footprint and median strip, in the vicinity and south of the M4 Motorway (Light Horse) Interchange, as well as within the Old Wallgrove Road interchange	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 4 and experience suggests the potential for contamination of heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides
Former army camp (WWII)	Within the construction footprint and median strip.	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, PCBs and OCPs	Moderate – Bonded asbestos and heavy metals have been identified within the former army camp. There is no information regarding PCBs and OCPs, however experience suggests the potential for contamination

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
		• UXO (nearby grenade range with slight potential for UXO)	
Precinct 5			
Railway and former disturbed ground	Within the construction footprint and median strip – in the vicinity of the railway	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides, phenolics (creosote)	Moderate – No information is available, however experience suggests the potential for contamination from the CoPC identified
Former building structures and historical businesses (chemical production, poultry farms), potential buried waste	Within the construction footprint and median strip, various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides, chlorinated hydrocarbons, VOCs, SVOCs, phenols	Moderate – No information is available, however experience suggests the potential for contamination from the CoPC identified
Filled in dams	Within the construction footprint and median strip	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Moderate – No information is available, however experience suggests the potential for contamination from the CoPC identified
Steel plant (Infrabuild NSW)	Adjoining the study area to the east, north of the rail line	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Metals, TRH, PAH, BTEX, phenols	Low - Listed on NSW EPA list of contaminated sites, however potentially impacted groundwater is unlikely to be encountered and source area is located outside the construction footprint

Notes: ACM – asbestos containing materials; TRH- total petroleum hydrocarbons; PAH – polycyclic aromatic hydrocarbons; BTEX – benzene, toluene, ethylbenzene and xylenes; PCBs – polychlorinated biphenyls; OCP – organochlorine pesticides; VOC - volatile organic compounds; and SVOCs – semi volatile organic compounds.

4.21.2 Bridge widening areas

It is assumed that low volumes of material would be excavated for bridge construction works for the proposed modification and the fill material used for the construction of the existing bridge abutments was likely natural material sourced within the vicinity of the bridge construction site.

There is limited likelihood for encountering potentially contaminated groundwater during the construction of the bridge pilings as it is a requirement under Transport's QA Specification B59 that temporary casings are to be used if groundwater is encountered during construction works. Any groundwater extracted from the excavation during pile construction would be minimal and is expected to be disposed of off-site. Soil excavated during piling works would be analysed to assess suitability for onsite reuse or waste classified for offsite disposal.

Based on the desktop review, source areas of potential contamination were identified within and surrounding the bridge widening areas of the study area, as summarised in Table 18. For each source area, CoPCs were identified based on the source of potential contamination. Only sources or activities that are within, adjacent or topographically up-gradient and within 100 metres of the study area near a bridge modification site have been considered as potential areas and sources of contamination. A likelihood for risk of contamination was then assigned for each source area. Areas of potential contamination are shown on Figure 4-26 to Figure 4-41. Bridge widening areas are shown on Figure 1-1 to Figure 1-5.

Table 18 Potential source areas and contaminants of concern – bridge widening areas

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
All Precincts			
Existing Westlink M7	Within the construction footprint	• Heavy metals, TRH, PAH and BTEX	Low – Standard emergency spill environmental safeguards were likely to have been implemented in the event of an accidental spill
Areas of former cut and fill associated with the construction of the Westlink M7	Within the construction footprint at various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Low – based on the assumptions above. Fill associated with existing Westlink M7 likely comprises of engineering fill, general fill material/topsoil sourced locally from construction works or imported fill. The volume of fill material in the bridge widening areas due to the original construction is likely to be low.
Areas of former filling near interceptions with surface water bodies	Within the construction footprint – near surface water bodies at B9817-NB, B9826-NB and B9827-SB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Low – based on the assumptions above. Fill associated with existing Westlink M7 likely comprises of engineering fill, general fill material/topsoil sourced locally from construction works or imported fill. The volume of fill material in the bridge widening areas due to the original construction is likely to be low.
Former building structures	Within the construction footprint at various locations	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Lead and PCBs	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1 and 4 and experience suggests the potential for contamination of lead and PCBs from hazardous building materials (HAZMAT)
Precinct 1			
Areas of disturbed terrain (former stockpiles)	Within the construction footprint adjacent to B9817-NB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides, herbicides	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1 and experience suggests the potential for contamination of heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
Substation and electricity production facilities (Endeavour Energy). Potential source of contamination to Cabramatta Creek	Adjoining the study area to the east and west, near B9825-SB, B9826-NB and B9827-SB	• PCBs, metals, TRH, PAH, BTEX • Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil)	Low - Listed on NSW EPA list of contaminated sites, however the likelihood of encountering potentially impacted groundwater is minimal and source area is located outside the construction footprint
Potential illegal dumping	Within the construction footprint adjacent to B9826-NB and B9827-SB	• Asbestos (bonded asbestos in the form of ACM on ground and in surface soils)	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 1
Hoxton Park RFS potential source of PFAS contamination to Cabramatta Creek	450 metres west of the study area. Locations B9826-NB and B9827-SB are in proximity to Cabramatta Creek	• PFAS • TRH, BTEX and PAHs	Low – PFAS has been identified during previous investigations. The NSW EPA is currently leading a PFAS investigation program of RFS sites. The likelihood of encountering potentially impacted groundwater is minimal and source area is located outside the construction footprint
Precinct 2			
Former large-scale agricultural sheds	Within the construction footprint and adjacent to B9841-NB and B9842-SB	• Heavy metal, TRH, PAH, BTEX, PCBs, herbicides and pesticides • Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil)	Moderate – No information is available, however experience suggests the potential for contamination
Precinct 3			
Waste management facility	Adjoining the study area to the east. Locations in proximity to B9861-NB and B9862-SB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Landfill leachate (Nutrients, Ammonia, Heavy metals, TRH, PAH, BTEX, PCBs, Phenols)	Low – The likelihood of encountering potentially impacted groundwater is minimal and source area is located outside the construction footprint

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
		• Impacted soil associated with the landfill (Heavy metals, TRH, PAH, BTEX, PCBs and Phenols) • Landfill gas • Potential PFAS	
Precinct 4			
Waste management facility	Within the construction footprint and adjoining the study area to the east. Location in proximity to B9863-NB, B9864-SB, B9870-NB, B9871-SB, B9873-NB and B9874-SB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Landfill leachate (Nutrients, Ammonia, Heavy metals, TRH, PAH, BTEX, PCBs, Phenols) • Impacted soil associated with the landfill (Heavy metals, TRH, PAH, BTEX, PCBs and Phenols) • Landfill gas • Potential PFAS	High – No information is available, however there is potential for encountering landfill leachate and gases.
Potential illegal dumping	Within the construction footprint and adjacent to B9893-NB and B9894-SB	• Asbestos (friable asbestos in soils), likely ACM throughout	Moderate – the asbestos register (**Section 4.18**) indicates asbestos is present in Precinct 4
Eastern Creek RFS	200 metres west of the study area, potential source of PFAS to Eastern Creek tributary within the study area. Locations B9893-NB and B9894-SB are in proximity.	• Potential PFAS • TRH, BTEX and PAH	Low –The likelihood of encountering potentially impacted groundwater is minimal and source area is located outside the construction footprint

Source area	Site located within or outside of proposed study area	CoPC	Likelihood for risk of contamination
Precinct 5			
Railway and former disturbed ground	Within the construction footprint – in the vicinity of the railway at B8245-NB and B9901-SB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides, phenolics (creosote)	Moderate – No information is available, however experience suggests the potential for contamination
Filled in dam pre 1991	Within the construction footprint adjacent to B9908-NB and B9909-SB	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Moderate – No information is available, however experience suggests the potential for contamination
Former poultry farm	Within the construction footprint adjacent to B9910-NB and B9911-SB	• Heavy metal, TRH, PAH, BTEX, PCBs, herbicides and pesticides • Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil)	Moderate – No information is available, however experience suggests the potential for contamination

4.21.3 Construction ancillary facilities

It is assumed that there would be a low likelihood of ground disturbance or excavation at construction ancillary facilities. There may be possible excavations for pier construction for site sheds/facilities if required and construction of slab on grade would be the preferred option to minimise excavations. A soil investigation at each construction ancillary facility will be undertaken to assess potential contamination from previous site activities and to form a baseline assessment. Any contamination identified would be managed accordingly.

Anecdotal evidence suggests that general fill material that exists in the areas of temporary access tracks to be used for the proposed modification, came from an unknown sources and is of unknown quality. Construction works for the temporary access roads for the proposed modification would include layering recycled road base over the existing land and minimal excavation would be required.

Based on the desktop study and the assumptions regarding the construction of the existing Westlink M7, sources of potential contamination were identified at construction ancillary facilities, as summarised in Table 19. For each site, CoPCs were identified based on the source of potential contamination. A likelihood for risk of contamination was then assigned for each site. Areas of potential contamination are shown on Figure 4-26 to Figure 4-41.

Table 19 Potential source areas and contaminants of concern – construction ancillary facilities

Site	Site address	Source	CoPC	Likelihood for risk of contamination
Construction ancillary facility - Zone D-2	Hoxton Park Road, Hinchinbrook	Former market gardens and road works depot (fuel and chemical storage and stockpiling of soil/construction waste)	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Metals, TRH, PAH, BTEX, phenols, OCPs and PCBs	Moderate – No information is available, however experience suggests the potential for contamination
Construction ancillary facility - Zone A-2	20 Blackbird Close, Len Waters Estate 30 Blackbird Close, Len Waters Estate	Adjoining former Hoxton Park Airport and filling for site levelling	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Metals, TRH, PAH, BTEX, phenols, OCPs and PCBs • PFAS	Moderate – No information is available, however experience suggests the potential for contamination
Construction ancillary facility – Zone A-3	Cowpasture Road, Elizabeth Hills Part Aviation Road	Adjoining former Hoxton Park Airport and filling for road construction	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Metals, TRH, PAH, BTEX, phenols, OCPs and PCBs • PFAS	Moderate – No information is available, however experience suggests the potential for contamination
Access roads	Various locations	Fill material of unknown origin and quality, and potential for uncontrolled dumping	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Metals, TRH, PAH, BTEX, phenols, OCPs and PCBs	Moderate – No information is available, however experience suggests the potential for contamination

4.21.4 Other sites within the construction footprint

Other sites within the construction footprint include locations of basins and noise walls. Excavation works for the construction of noise walls would be limited to piling and therefore low volumes of potential fill material of unknown source and quality would be encountered. There is a potential for contaminated water and sediment to be encountered during modifications to basins, as spills and leaks on the road pavement from vehicles can overflow into the stormwater system, into the basins.

Based on the desktop study and the assumptions regarding the construction of the existing Westlink M7, sources of potential contamination were identified for basins and noise walls within the construction footprint, as summarised in Table 20. CoPCs were identified based on the source of potential contamination. A likelihood for risk of contamination was then assigned for each site.

Table 20 Potential source areas and contaminants of concern – Other sites within the construction footprint

Site	Site address	Source	CoPC	Likelihood for risk of contamination
Noise walls	Within the construction footprint – various locations	Fill material of unknown origin and quality, and neighbouring commercial/industrial land uses	• Asbestos (bonded asbestos in the form of ACM as well as friable asbestos and asbestos fines in soil) • Heavy metals, TRH, PAH, BTEX, PCBs, pesticides and herbicides	Moderate – No information is available, however experience suggests the potential for contamination from neighbouring current and historical commercial/ industrial land uses
Basins	Within the construction footprint	Stormwater runoff from the existing Westlink M7	• TRH, PAH, BTEX, Phenols	Moderate – Known spills and leaks from vehicles

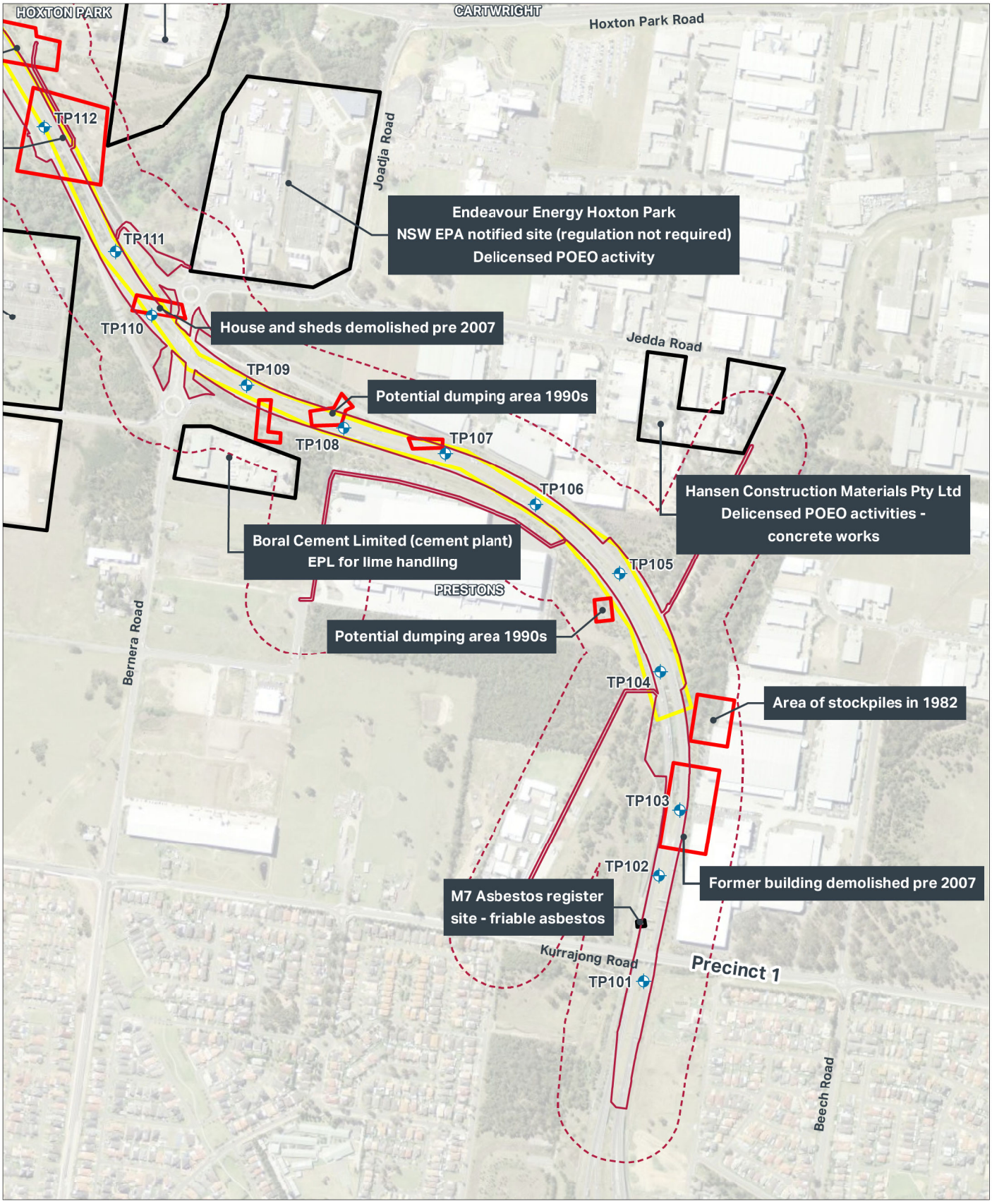


FIGURE 4-26: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 1 OF 16)

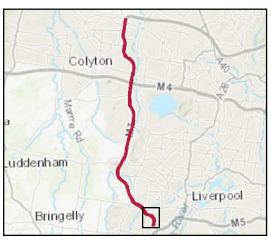
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit



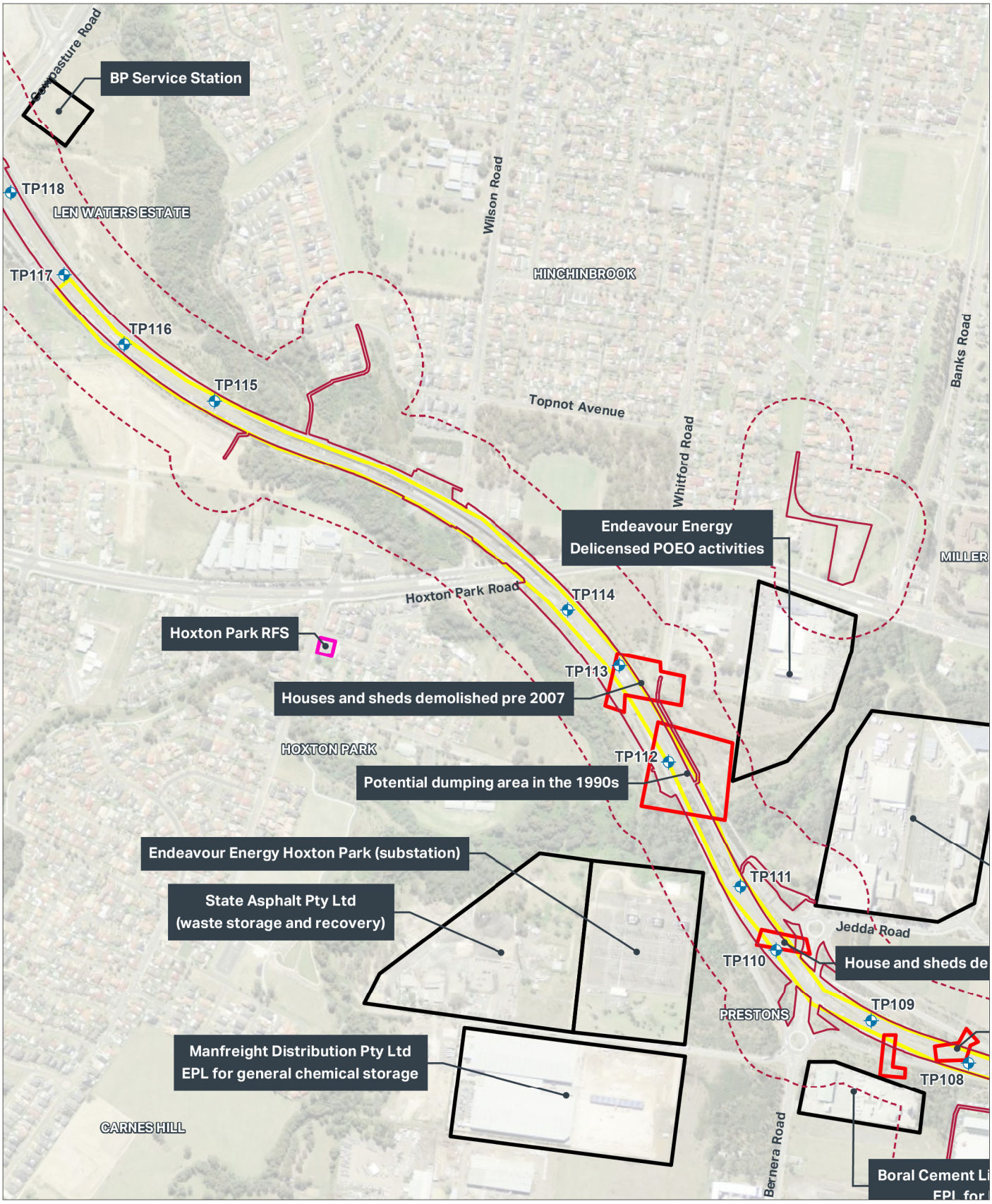


FIGURE 4-27: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 2 OF 16)

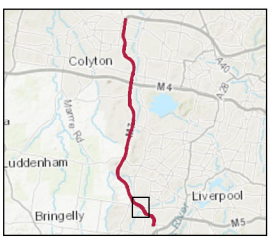
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Fire brigade site (potential PFAS source)
- Past M7 cut and fill section
- Test pit



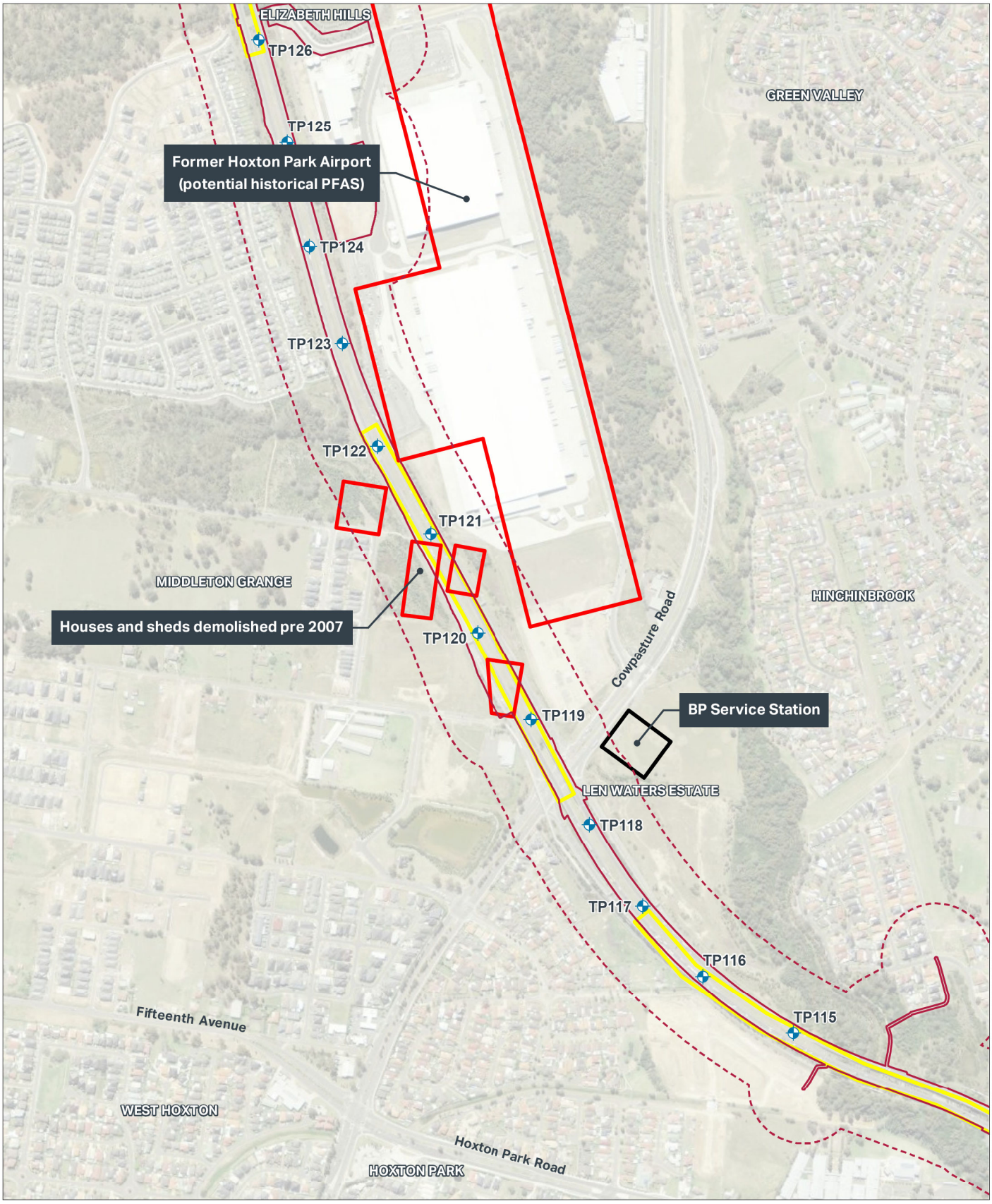


FIGURE 4-28: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 3 OF 16)

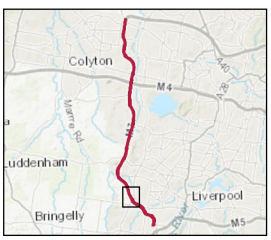
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit



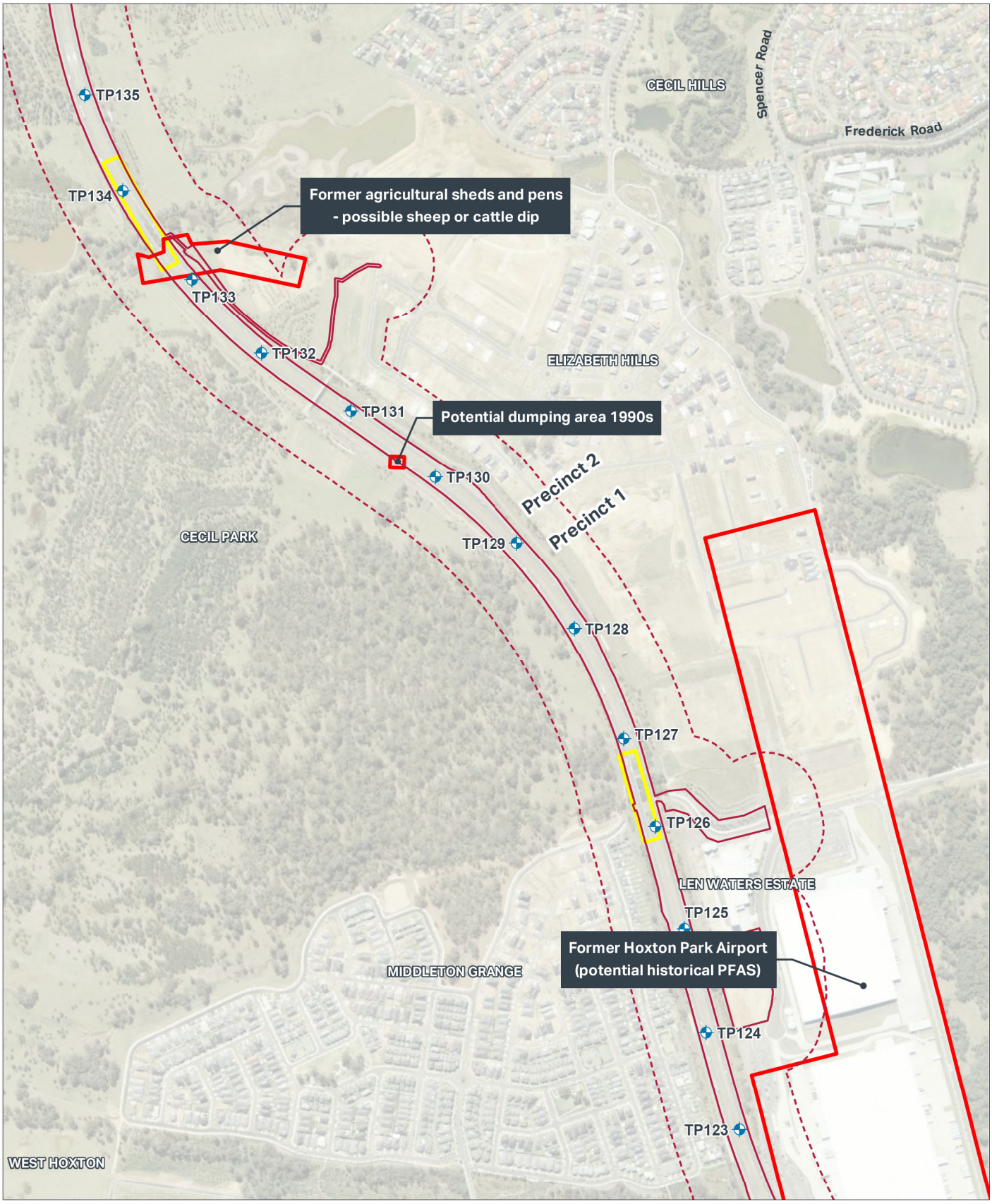


FIGURE 4-29: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 4 OF 16)

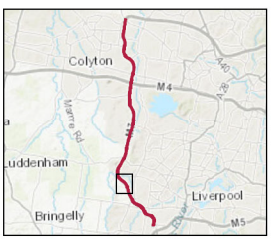
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit



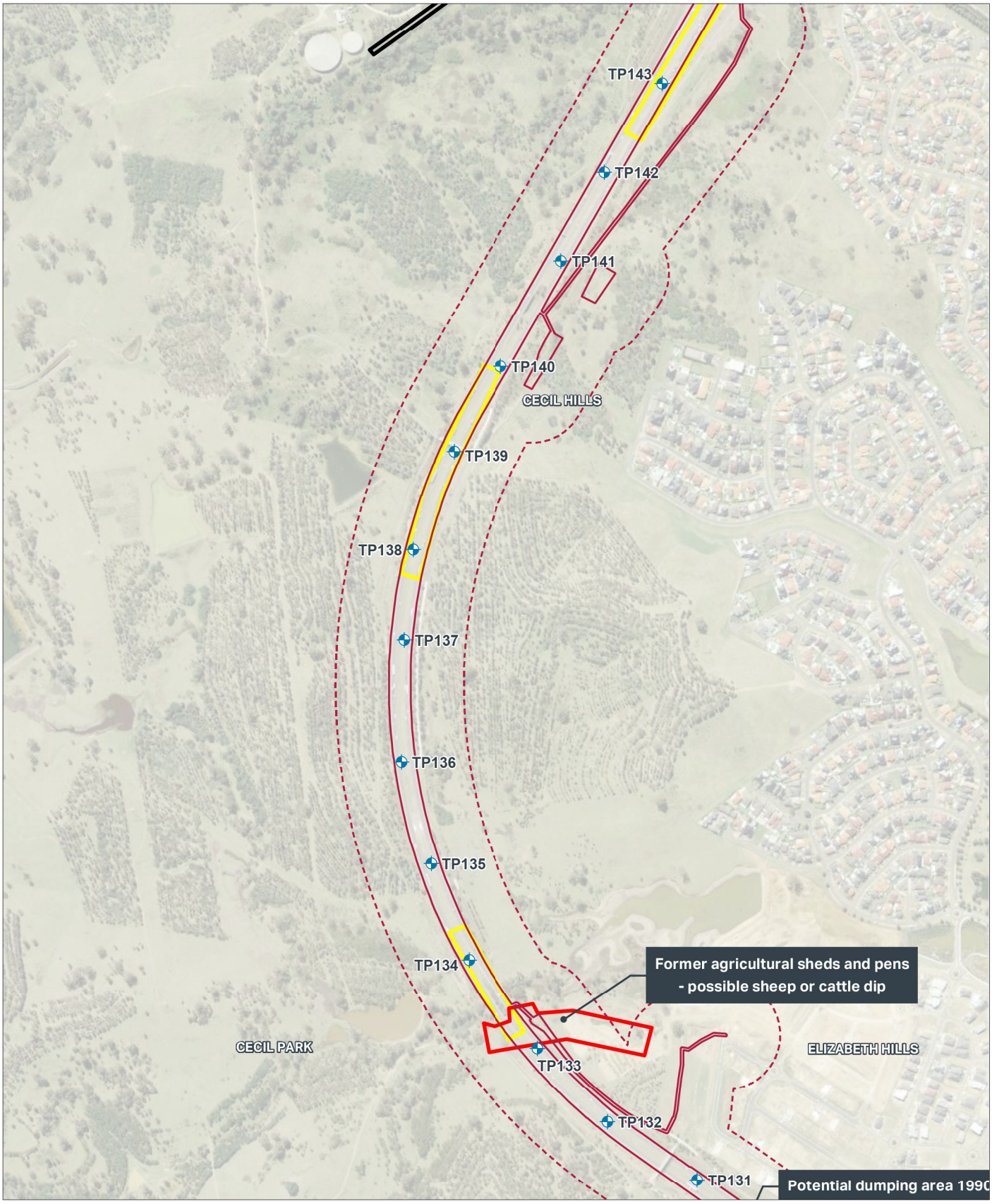


FIGURE 4-30: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 5 OF 16)

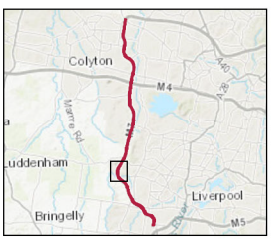
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit



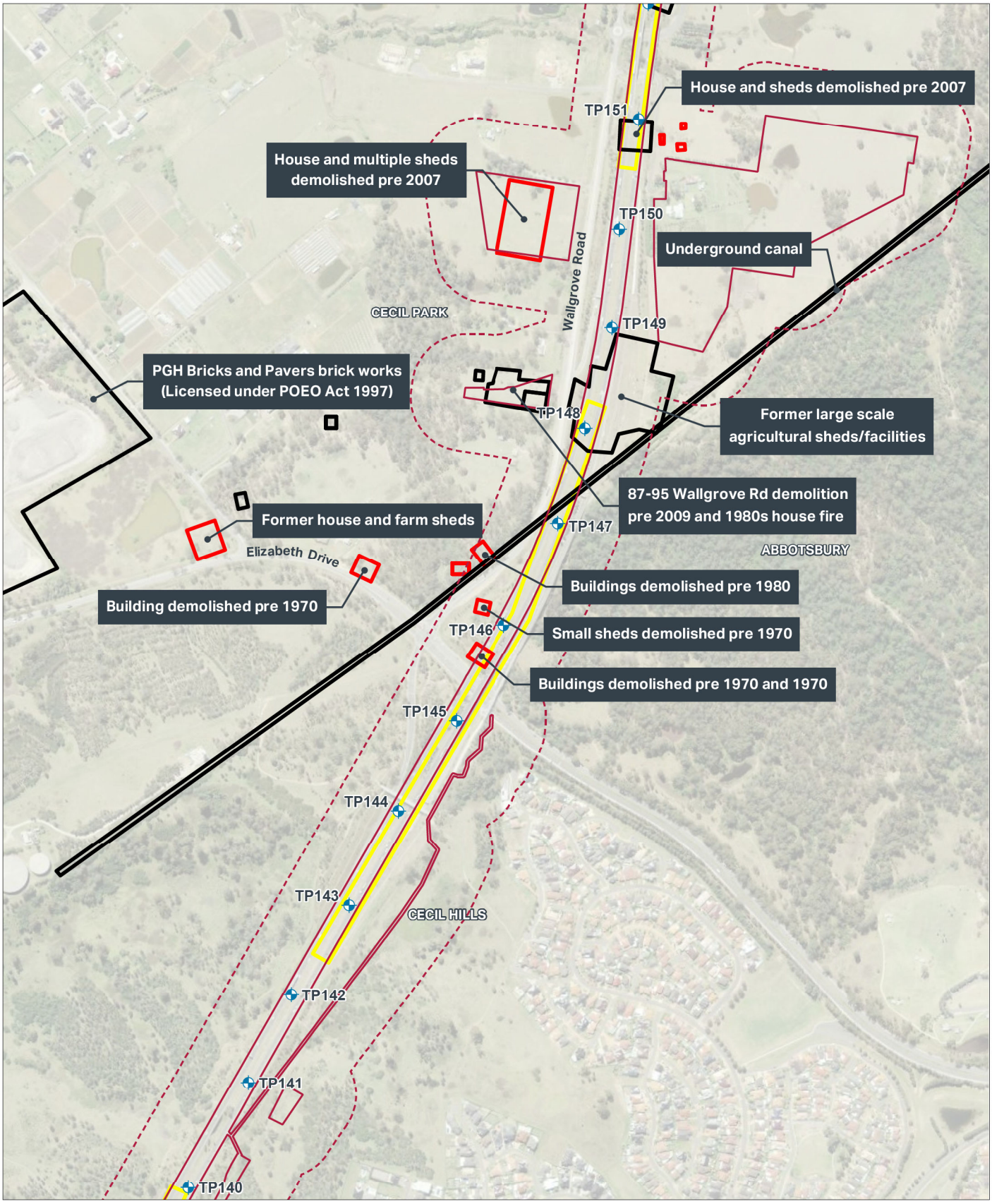


FIGURE 4-31: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 6 OF 16)

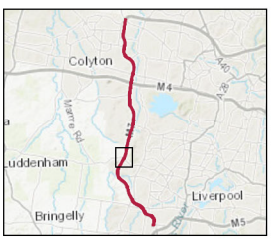
N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit



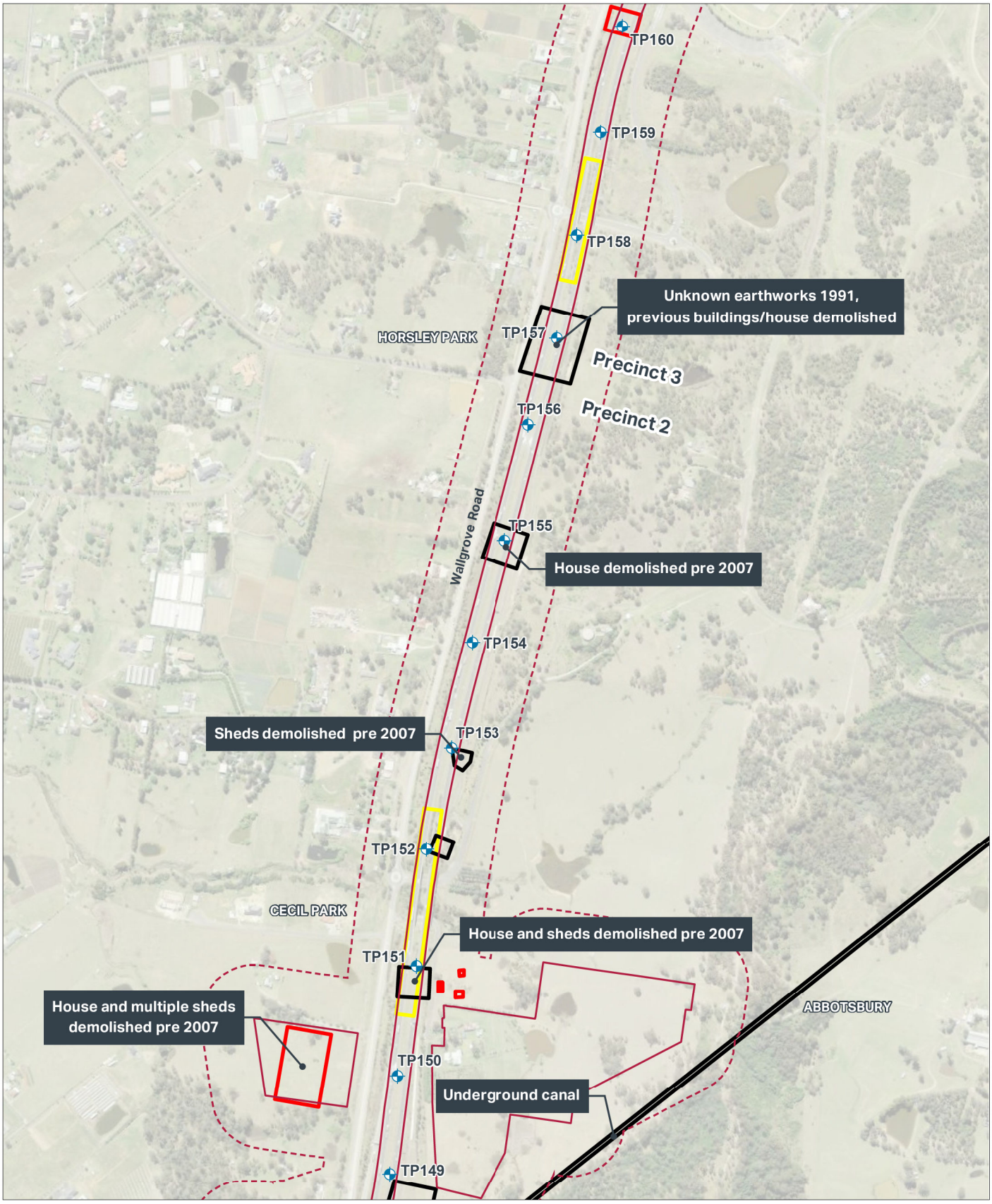


FIGURE 4-32: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 7 OF 16)

N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past M7 cut and fill section
- Test pit

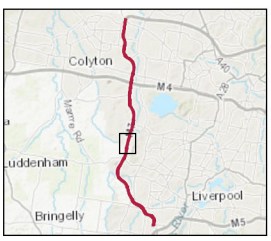


FIGURE 4-33: POTENTIAL CONTAMINATING LAND USES AND SOURCES WITHIN STUDY AREA (SHEET 8 OF 16)

N

0 100 200 m

AECOM

Legend

- Construction footprint
- Study area
- Current potentially contaminating land use
- Former potential contamination source from aerial photograph review
- Past potentially contaminating land use (from UBD data)
- Past M7 cut and fill section
- Test pit