# Appendices

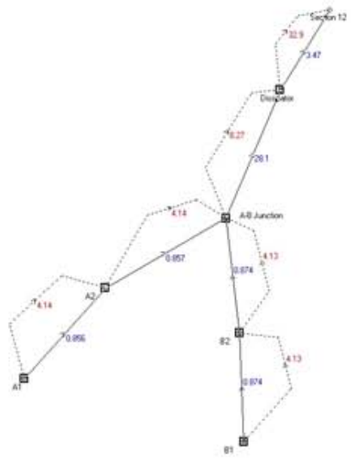
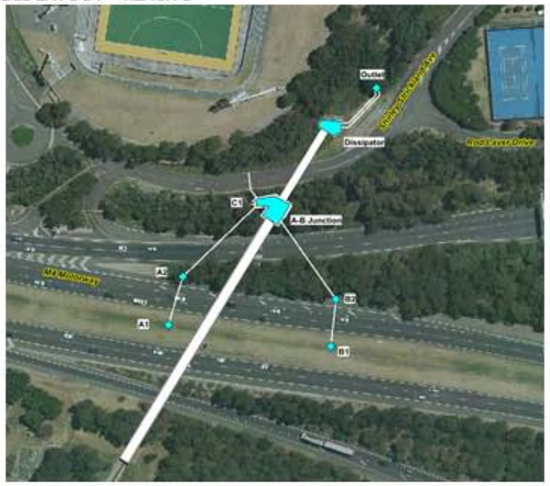
# Appendix 1

## Summary of Hydraulic Structures

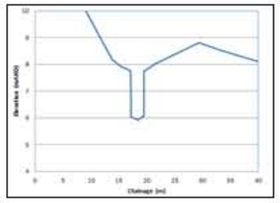
| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch 8610B - REACH A**<br><br>**Existing Catchment incl. road 270.8 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| RS13.5<br>Bridge | | | 2.37 | 2.23 | | 56.9m XS to XS<br>24.6m deck | 0.25 | Estimated using LIDAR | Drainage Estimated including size, with invert levels from LIDAR<br><br>Soffit, abutment, piers, assumed<br><br>Overflow to Soffit assumed 750mm | Bridge | n/a | No ground survey.<br><br>Overflow Levels from LIDAR | Parramatta Road/ Great Western Rd bridge |
| RS10.5<br>Bridge | | | 1.85 | 1.80 | LIDAR | 33.8 | 0.15 | Estimated using LIDAR | Drainage Estimated including size, with invert levels from LIDAR<br><br>Soffit, abutment, piers, assumed<br><br>Overflow to Soffit assumed 750mm | Bridge | n/a | No ground survey.<br><br>Overflow Levels from LIDAR | Park Rd bridge |
| RS9.5<br>Concrete Lined Channel | 8.33 | 2.71 | 1.95<br><br>1.95XS | 1.76<br><br>1.76XS | Grd Surv | 73.5m XS to XS<br>45.2m | 0.42 | Grd Surv | Overflow from ground survey.<br><br>Culvert height (invert to obvert levels)<br><br>Culvert width measured. | Culvert | none | Culvert invert levels, soffit levels, overflow levels supplied. No piers. | M4 Motorway culvert |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch7750B - REACH B**<br><br>**Existing Catchment incl. road 84.3 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| RS19 | 4.8 | 0.60 (assumed) | 8.11 IL (interpolated) | 7.67 IL | LIDAR | 21.5 | 2.05 | Estimated using LIDAR | Invert level interpolated using LIDAR data.<br><br>Bridge width measured.<br><br>Height estimated as 600mm based on cover. | Bridge | none | No ground survey.<br><br>Overflow Levels from LIDAR | Telopea Ave bridge |
| RS14.5<br>Concrete Lined Channel – GWH<br>  | 4.16 | 1.29 | 6.94 IL<br><br>7.00 IL at XS | 5.84 IL<br><br>5.47IL at XS | GrdSurv<br><br>GrdSurv | 30.1<br><br>73.4 | 3.65<br><br>2.08 | GrdSurv | Overflow from LIDAR<br><br>Channel details from ground survey. | Culvert | none | Channel details upstream crossing including number, size and dimensions, us invert level. | Parramatta Road/ Great Western Rd culvert |
| RS13.5<br>Concrete Lined Channel – Motorway<br>  | 4.58 | 1.63 | 5.44 IL<br><br>5.47 IL at XS | 4.10<br><br>4.14 IL XS | GrdSurv | 126.7<br><br>163.4 | 1.06 | GrdSurv | Culvert height (invert to obvert levels)<br><br>Culvert width measured. | Culvert | none | Culvert invert levels, soffit levels, overflow levels supplied. No piers. | Motorway culvert |
| Culverts DS end looking US<br>  | | | | | | | | Estimated from photos/ GrdSurv | DRAINS (see model layout below)<br><br>Results used for :<br><br>Computation of Overland Flow at cross section RS13 HECRAS<br><br>Computation of Pipe flow to creek from roadway. Flow diversion in XP-RAFTS | DRAINS model includes pipe and culvert inflows to hydraulic structure and dissipator | | Invert Levels provided. Reduced levels provided. | Structure Immed. DS Motorway |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| RS 11  | Cross Section | | 3.60 IL | - | LIDAR | | | n/a | LIDAR used for cross section topography | Cross Section | n/a | Requested cross section including invert levels below water surface. Not provided | Shirley Strickland Ave |
| RS9.5 Bridge  | 20.2 m | - | 5.19 to 4.73 RL Soffit<br><br>6.91 to 6.26 RL Overflow | - | LIDAR | 13.4 m | - | n/a | Conveyance with single Cross Section<br><br>Piers included | Bridge | 1 set piers | Bridge survey including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, abutment and pier details.<br><br>Invert levels below water surface. Not provided. | Shirley Strickland Ave |
| RS 8.5 bridge  | 31.8 m | - | 5.88 to 6.05RL Soffit<br><br>7.88 to 8.06 RL Overflow | - | LIDAR | 4.2 m | - | n/a | Conveyance with single Cross Section | Conveyance with single Cross Section | 2 sets of piers on each bank | Bridge survey including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, abutment and pier details.<br><br>Invert levels below water surface. Not provided. | John Bathurst Bridge |
| RS 7.5 bridge | 27.7 m | - | 4.73 to 5.19 RL Soffit<br><br>6.91 to 6.26 RL Overflow | - | LIDAR | 10.0 m | - | n/a | Conveyance with single Cross Section | Conveyance with single Cross Section | 2 sets of piers on each bank | Bridge survey including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, abutment and pier details.<br><br>Invert levels below water surface. Not provided. | Roy Emerson Bridge |
| RS 6.5 bridge | 27.3 m | - | 6.37 to 6.38 RL Soffit<br><br>8.35 to 8.43 RL Overflow | - | LIDAR | 9.2 m | - | n/a | Conveyance with single Cross Section | Conveyance with single Cross Section | 2 sets of piers on each bank | Bridge survey including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, abutment and pier details.<br><br>Invert levels below water surface. Not provided. | Frank Sedgman Bridge |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***DRAINS MODEL LAYOUT – REACH B***   | | | | | | | | | | | | | |
| **Identifier/ River Station** | **Width** | **Height** | **Upstream Invert Level** | **Downstream Invert Level** | **Source of Invert Level** | **Length (m)** | **Grade (%)** | **Source of Pipe Data** | **Modelling Approach** | | **Number of Piers** | **Ground Survey** | **Location** |
| Conduit A  | A1 -600 | - | 6.27 IL<br>8.99 RL | 5.87 IL<br>8.85 RL | Grd Surv | 22.1 | 1.81 | Assumed based on A2 conduit | Modelled in DRAINS model for ReachB<br><br>0.86 m3/s | DRAINS | n/a | Invert levels, Surface Levels<br>No pipe size, No photo | Pipe from M4 Motorway Node A1 to A2<br>(refer to schematic above) |
| ~600 Conduit DS end Incoming left WEST | A2 -600 | - | 4.95 IL<br>8.85 RL | 4.25 IL<br>5.68 RL | Grd Surv | 46.3 | 1.51 | GrdSurv | Modelled in DRAINS model for ReachB<br><br>0.86 m3/s | DRAINS | n/a | Invert levels, Surface Levels, Pipe Size, Photo | Pipe from M4 Motorway Node A2 to A-B junction<br>(refer to schematic above) |
|  | C1 - 2-900 conduits Incoming right WEST unknown source | - | n/a | 4.30 IL | | | | GrdSurv | Allowance made for flow through conduit based on pipe size alone (approx. 2m/s~2.5m3/s)<br><br>Added to DRAINS model for ReachB | DRAINS | n/a | Invert level at DS structure, Photo | A-B junction<br>(refer to schematic above) |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conduit B | B1 - 600 | - | 6.82 IL<br>8.46 RL | 6.66 IL<br>8.46 RL | GrdSurv | 21.4 | 0.75 | Assumed based on B2 conduit | Modelled in DRAINS model for ReachB<br>0.87 m3/s | DRAINS | n/a | Invert levels, Surface Levels | Pipe from M4 Motorway Node B1 to B2<br>(refer to schematic above) |
|  <br>~2-600 conduits<br>Incoming EAST | B2 -2-600 | - | 6.66 IL<br>8.46 RL | 4.10 IL<br>5.68 RL | GrdSurv | 46.0 | 5.57 | Size from Photo and RMS spreadsheet | Modelled in DRAINS model for ReachB<br>0.87 m3/s<br><br>***Results of DRAINS model – flow diversion from node A2/B2 used in XP-RAFTS (1.7m3/s)*** | DRAINS | n/a | Invert levels, Surface Levels, Photo | Pipe from M4 Motorway B2 to A-B junction<br>(refer to schematic above) |
| Culverts to Dissipator<br>US photo<br>  <br>DS photo/ Dissipator<br>  | 3-<br>2.70*1.35 | - | 3.98 IL<br><br>5.92 RL | 3.82 IL<br><br>5.23 RL | GrdSurv | 36.7 | 0.44 | Width GrdSurv<br>Height Photo<br><br>Culvert height (invert to obvert levels)<br><br>Culvert width measured. | Added to DRAINS model for ReachB<br>23.8 m3/s<br><br>***Results of DRAINS model - Underground flows removed from total flows for overland flow component at HECRAS at RS13 28.1m3/s*** | DRAINS OUTFLOW FROM DRAINS TO HECRAS RS12 | 2 piers | Invert levels, Obvert Levels Photo. | Culverts from hydraulic structure<br>A-B junction to Dissipator<br>(refer to schematic above) |
| Dissipator to outlet at creek | 2 –<br>1050dia | | 3.65 IL | 3.57 IL | GrdSurv | 25.7 | 0.31 | Size from Photo | Modelled in DRAINS model for ReachB<br>3.5m3/s | | n/a | Reduced levels, layout | Pipes from Dissipator AB-Junction to Outlet |
| TL level | From<br>RS 12<br>1%AEP | | | | | | | | Modelled in DRAINS model for ReachB<br>4.63 RL | | n/a | | Downstream of 2-1050 dia pipes cross section RS12. |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch6950B - REACH C**<br><br>**Existing Catchment incl. road 42.9 ha** | | | | | | | | | Hydrology<br>Existing/ Post<br><br>XP-RAFTS | Hydraulics<br>Existing/ Post<br><br>HECRAS | | | |
| Transverse Drainage Not Located | 2- 1350dia | - | 9.09 IL | 5.29 IL | LIDAR | 234.6 m | 1.62 | Assumed | Assumed 2 -1350 dia pipes ( ~2-54inch pipes) | Culvert | n/a | Ground Survey: Requested details of transverse drainage including inlet structure and conduits. Details of conduits not provided.<br><br>3-54 inch pipes noted on Auburn Council Asset Plan situated downstream of open channel<br><br>2-54 inch pipes assumed to convey flows from upstream to downstream side of M4 Motorway<br><br>Open channel from east ~ 2.7m*1.8m | ~230m west of Birnie Ave |
| UPGRADE XS's with GrdSury | | | | | | | | | | | | | |
| RS13<br>  | 2.48m width | 5.92 IL<br>7.76 RL ToB | | | | | | | Cross Section REMOVED from HECRAS model – altered flow path | Open Channel | none | Channel details | Channel north of M4 Motorway |
| RS12 | 2.43m width | 5.75 IL<br>7.60 RL ToB | | | | | | | Cross Section REMOVED from HECRAS model – altered flow path | Open Channel | none | Channel details | Channel north of M4 Motorway |
| RS11<br>  | 2.65m width | 5.52 IL<br>7.36 RL ToB | | | | | | | Cross Section REMOVED from HECRAS model – altered flow path | Open Channel | none | Channel details | Channel north of M4 Motorway |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northern Channel | | | | | | | | | | | | | |
| RS10 | 2.54m width | 5.43 IL<br>7.26 RL ToB | | | | | | | Cross Section REMOVED from HECRAS model – altered flow path | Open Channel | none | Channel details | Channel north of Motorway |
| RS9<br>  <br>DS end (outlet to channel) | 2.57m width | 5.38 IL<br>7.21 RL ToB | | | | | | | Cross Section REMOVED from HECRAS model – altered flow path | Headwall | none | Channel details | Channel north of M4 Motorway discharging to twin pipes |
| RS8 | | 6.85 IL | | Revised XS | GrdSury | | | | Assumed to convey total flow | Overland Flow Path | none | Channel details | Back of Property at Carter Street – adjacent to M4 Motorway |
| RS7 | | 6.78 IL | | Revised XS | GrdSury | | | | Assumed to convey total flow | Overland Flow Path | none | Channel details | Back of Property at Carter Street – adjacent to M4 Motorway |
| RS6 | | 6.56 IL<br>LIDAR<br>6.63 IL<br>GrdSury | | XS | LIDAR used | | | | Assumed to convey total flow | Overland Flow Path | none | Surface levels | Within Property at Carter Street |
| RS5.5 | | 6.59 IL<br>LIDAR<br>6.70 IL<br>GrdSury | | XS | LIDAR used | | | | Assumed to convey total flow | Overland Flow Path | none | Surface levels | Within Property at Carter Street |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch6100B – Haslams Tributary**<br><br>**Existing Catchment incl. road 251.3 ha**<br>  | | | | | | | | | Hydrology<br>Existing/ Post<br><br>XP-RAFTS | Hydraulics<br>Existing/ Post<br><br>HECRAS | none | | |
| RS5.5<br>Concrete Lined Channel – GWH<br>  <br>  | 2- 3.00m (twin culverts) | 1.15 m | 1.59 IL<br><br>1.65 IL XS | 1.63 IL<br><br>1.61 IL XS | GrdSury | 24.3m | -0.16% | Survey<br><br>Overflow level 4.28 RL railing<br><br>1 Pier between culverts | Culvert height (invert to obvert levels)<br><br>Culvert width measured | Culvert | 1 pier | Bridge including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, Abutment and piers. Photo. | Parramatta Road/ Great Western Rd culvert |
| RS3.5<br><br>Concrete Lined Channel – Motorway<br><br>Upstream end<br>  <br><br>Downstream end | 6.10m | 2.32m | 1.17 IL<br><br>1.32 IL XS<br><br>US Pipe<br>3.20 RL | 0.75 IL<br><br>0.60 IL XS | GrdSury | 79.1m | 0.53 | Survey | (upstream pipe assumed to have negligible impact on flood levels) | Culvert | none | Transverse Drainage include details of inlet and outlet structures. Culverts to include number, size, dimensions, us invert, ds invert level. Photo.<br><br>Reduced levels at pipe. Photo | Motorway culvert |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | | | | | | | | | | |
| Multiple Pipes RS3<br>  | | | 0.60 IL<br>2.36 RL<br>2.18 RL<br>2.84 RL<br>2.57 RL<br>2.33 RL | | GrdSurv | | | | (upstream pipe assumed to have negligible impact on flood levels) | - | none | Reduced levels at pipe. Photo | 35m downstream of M4Motorway |
| Bridge RS2.5<br>  | 5.00 m | 2.21 m | 0.60 IL<br><br>Soffit<br>2.81 RL<br><br>Overflow<br>3.86 RL | 0.46 IL | GrdSurv | 30.9 XS to XS<br>7.8m deck | 0.45 | | | Bridge | none | Bridge including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, Abutment and piers. Photo. | Bridge 60m downstream of M4Motorway |
| RS2.5 Pipes<br>  | | | 2.86 RL<br>2.68 RL<br>2.86 RL | | GrdSurv | | | | (upstream pipe assumed to have negligible impact on flood levels) | - | none | Reduced levels at pipe. Photo | 70m downstream of M4Motorway |
| Pipes at outlet | | | 1.80 RL | | | | | | (upstream pipe assumed to have negligible impact on flood levels) | - | none | Reduced levels at pipe. Photo | 10m upstream of Haslams Creek along Haslams Tributary |
| Creek inverts<br>(excluding sites where ground survey was available | | | | | LIDAR | | | | LIDAR Cross Section used with invert level at Haslams Creek assumed to be 0mAHD. | Cross Sections | none | | |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch5800B – Haslams Creek**<br><br>**Existing Catchment incl. road 991.3 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| Existing Model – extended to Parramatta River | | | | | | | | | Levels adopted from previous model setup | | | | Haslams Creek |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch4950B – REACH D**<br><br>**Existing Catchment incl. road 17.1 ha**<br>  | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| RS18.5<br><br>1650 dia<br>Conduit beneath Motorway<br>  | 1650 dia | - | 6.02 IL | 4.68 IL<br><br>4.50 IL XS | GrdSurv | 140.2 | 0.96 | RMS spreadsheet | | Culvert | None | Invert Levels, Surface Level | Motorway culvert |
| RS17 Open Channel<br>  | 0.96 m | 1.19 m | 4.17 | - | GrdSurv | | | n/a | Details of survey of channel provided using Ground Survey and LIDAR used for overbank areas. | Open Channel | n/a | Details of channel including invert levels, top of bank, fence, overbank | Between Beaconsfield Street and M4 Motorway |
| RS16.5<br><br>Looking downstream from crossing<br>  | 0.95 m | 1.26 m | 4.17 IL<br><br>Overflow ~6.6RL fence<br><br>5.67RL Road adopted | 3.84 IL | GrdSurv | 43.5<br><br>21.3 deck length | 0.76 | Ground Survey | Details of channel and overflow levels from Ground Survey | Bridge | None | Bridge including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, Abutment and piers. Photo. | Beaconsfield Street Bridge |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RS14.5  | 1.73 m | 1.37 m | 3.41 IL<br><br>Overflow ~6.0 fence 5.02 Rd | 2.95 IL (extrapolate) | GrdSury | 50.5<br><br>20.0 deck length | 0.91 | | Details of channel and overflow levels from Ground Survey | Bridge | None | Bridge including US section, DS section, soffit level, overflow levels including railings and barriers. Channel details, Abutment and piers. Photo. | Bligh Street Bridge |
| RS12 to RS6 | 1.73 m | 1.37 m | 2.95 IL | 0.51 IL | GrdSury and LIDAR | 499.2 | 0.49 | Channel at Bligh Street Bridge | Culvert modelled in DRAINS.<br><br>1.73m*1.37m culvert assumed based on survey at Carnarvon Street. RS12 to RS6.<br>Capacity 4.7m3/s<br><br>Culvert capacity removed from Total Flow for overland flow component in HECRAS. | Modelled in DRAINS model for ReachB | | | Carnarvon Street to DarbySt/Vore St roundabout |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch4400B – REACH E**<br><br>**Existing Catchment incl. road 3.6 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| RS15 Inlet Structure to conduit<br>  | Inlet Structure<br><br>Grate 1.27m *0.98m<br><br>Incoming 300 dia pipe | | Grate 17.34 RL<br><br>15.52 IL<br>17.34 RL | 15.52<br>17.34 | GrdSurv/ WAE drawing | | 0.0 | SWR WAE drwg | | Inflows to grate | None | Transverse Drainage include details of inlet and outlet structures. Culverts to include number, size, dimensions, us invert, ds invert level. Photo of inlet structure. | Adderley Street Basin Inlet |
| RS14.2 Conduit discharging basin | 750 dia (GIS)<br><br>1050 dia (WAE) | | 14.14 IL<br>17.30 RL<br><br>10.34 IL<br>12.55 RL | 10.34 IL<br>12.55 RL<br><br>9.75 IL<br>11.71 RL | GrdSurv/<br><br>WAE drawing | 35.6 m<br><br>85.3 m | 10.7<br><br>0.7 | 750dia (RMS)<br><br>Basin and Pipe Layout (SWR WAE drwgs) | WAE Drwg No F4E-D-013/ F4E-D-004<br><br>*Embankment Level 17.80 RL<br><br>*Spillway Level 17.60RL, 1-2m width | DRAINS used to model pipe capacity in addition to weir/orifice calculation for inflows to grate. | n/a | Transverse Drainage include details of inlet and outlet structures. Culverts to include number, size, dimensions, us invert, ds invert level. Photo of inlet structure.<br><br>WAE drawing used for levels RMS spreadsheet for pipe size. | Adderley Street Basin to M4 Motorway Drainage |
| RS14 Downstream of Deakin Street<br>  | | | | | | | | | Cross section assumed to convey total flow | | None | Invert Levels, reduced levels | Deakin Street Overland Flow Path |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch4400B – REACH F**<br><br>**Existing Catchment incl. road 69.4 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Existing/ Post<br><br>HECRAS | | | |
| RS0.25 Bridge Near Duck River | - | - | 0.52 | 0.27 | LIDAR | 50.4 | 0.50 | n/a | Estimated Overflow Level at 2.65m RL using LIDAR Assumed deck height 0.75m | Bridge | None | none | Bridge Near Duck River |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch600B –RAFTS MODEL ONLY**<br><br>**Existing Catchment incl. road 22.0 ha** | | | | | | | | | Hydrology Existing/ Post<br><br>XP-RAFTS | Hydraulics Basin Model<br><br>XP-RAFTS | | | |
| Conduit1 | 1600dia | - | 12.02 RL | 12.59 RL | LIDAR | 46m | 0.5 min | Size from (RMS).<br><br>Pits not located by GrdSury | Drainage: size from spreadsheet, with invert levels estimated using surface levels from LIDAR | | n/a | Pits not located by GrdSury | A'Becketts Creek Inflow from north side of M4 Motorway, west of Church Street |
| Conduit2 | 1650dia | | 10.82 RL | 6.01 RL | LIDAR | 152 | 3.16 | Holroyd<br><br>Pits not located by GrdSury | Drainage: size from spreadsheet, with invert levels estimated using surface levels from LIDAR | | n/a | Pits not located by GrdSury | A'Becketts Creek Inflow from north side of M4 Motorway, west of Church Street |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch1400B – A'BECKETTS CREEK**<br><br>**Existing Catchment incl. road to:**<br>○ **US of AGL Channel: 513.8 ha**<br>○ **Railway: 585.2 ha**<br>○ **Alfred St: 660.5 ha**<br>○ **James Ruse Dr: 698.9 ha**<br>  | | | | | | | | | MIKE11 Input from previous GHD model<br><br>Existing and Post using adjustments for local inflows using XP-RAFTS resulting in similar hydrographs in 1%AEP<br><br>Adopted Existing Flows for both Existing /Post Models | Hydraulics Existing/ Post<br><br>HECRAS Incorporation of existing and proposed piers | | | |
| RS40.15 cycleway and on-ramp | | | Overflow 11.06 RL<br><br>Soffit 10.40 RL | | | | | | Levels used from on-ramp | Bridge | none | Survey of on-ramp including railings, soffit, overflow levels Channel details<br><br>Details of cycleway not provided. | On-ramp upstream of Church Street |
| RS38.15 Church St<br>  <br>Source: Google | | | 4.16 IL | 3.33 IL | GrdSury | 74.2m | 1.12 | | | Bridge | | Reduced levels | Church Street Bridge |
| RS39 to RS11.1<br>  | 3.87 m | 2.36 m | 4.51 IL | 3.65 IL | GrdSury | 74.2 m | 1.16 | | Open channel with increased roughness coefficient | | none | Levels at creek upstream and downstream of culvert.<br><br>Detailed 3d strings along creekline from on-ramp near Church Street to James Ruse Drive | Culvert along A'Becketts Creek below railway |
| RS10.59<br>Cycleway US Railway<br>  | | | Overflow 8.6RL<br><br>Deck/ fence assumed 2.0m, soffit ~ 6.6 RL | | | | | | Incorporated in revised model with minor to insignificant impact | Bridge | | Reduced levels | Cycleway upstream of Railway |
| RS 10.5 Railway | | | Overflow 18.9 RL | | | | | | Railway above PMF flood level. negligible impact | Cross Section included beneath railway | Railway Bridge | Reduced levels. | Railway above PMF flood level |

| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RS 10.39<br><br>From cycleway downstream of railway<br><br>  <br><br>Towards cycleway downstream of railway<br><br>  <br>Source: Google | | | Overflow 7.0 RL<br><br>Deck/fence estimated as 2.0m using photo. Soffit ~4.9 RL | | | | | | Incorporated in revised model with minor to insignificant impact | Bridge | | Reduced levels | Cycleway downstream of Railway |
| Good St<br>RS8.75<br><br>  | 5.90 m | - | 0.56 IL | 0.44 IL | GrdSurv | 48.6m XS to XS<br><br>16.0m deck | 0.25 | n/a | | Bridge | | Details of Good Street bridge beneath M4 Motorway overpass.<br>Channel details piers. | Good Street Bridge |
| RS8.05 Alfred St | 8.0 m | | 0.20 IL | 0.13 IL | GrdSurv | 53.7m XS to XS | 0.13 | | | Bridge | none | | Alfred St Bridge |
| RS7.25 Arthur St | 8.0 m | | -0.09 IL interpolated | -0.14 IL interpolated | | 43.3m XS to XS | 0.12 | | | Bridge | none | | Arthur St bridge |
| RS2.05 Off-ramp | 25.8 m | | -0.40 IL interpolated | -0.51 IL interpolated | | 100.0m XS to XS | 0.11 | | | Bridge | none | | |
| Piers along A'Becketts Creek<br>  | | | | | | | | | Incorporated existing and post case piers. | | | Existing piers (not complete) | Church Street to James Ruse Drive |

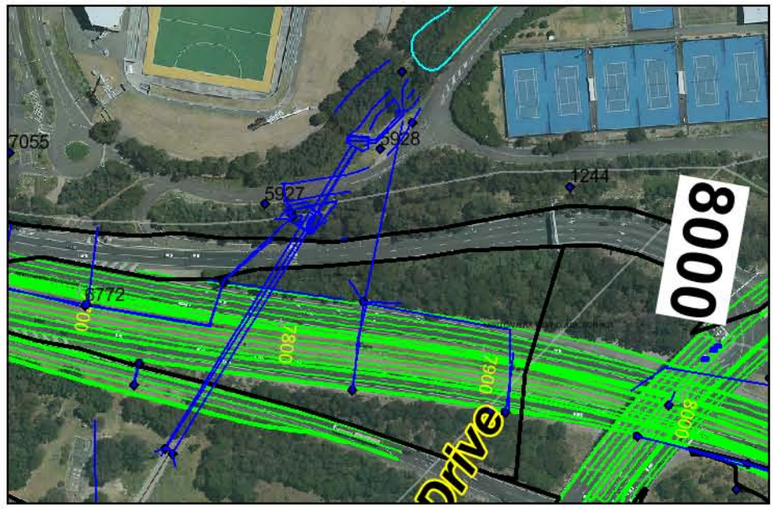
| Identifier/ River Station | Width | Height | Upstream Invert Level | Downstream Invert Level | Source of Invert Level | Length (m) | Grade (%) | Source of Pipe Data | Modelling Approach | | Number of Piers | Ground Survey | Location |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ch2500B – DUCK CREEK**<br><br>**Existing Catchment to incl. road 793.0 ha**<br>  | | | | | | | | n/a | Hydrology<br>Existing/ Post<br><br>Flows from existing TUFLOW model to HECRAS | Hydraulics<br>Existing/ Post<br><br>HECRAS And TUFLOW<br><br>Existing and Post Piers | | DEM including channel, piers, channel beneath overpass | Duck Creek |
| **Ch3400B – DUCK RIVER**<br><br>**Existing Catchment to incl. road 1883.1 ha**<br>  | | | | | | | | n/a | Hydrology<br>Existing/ Post<br><br>Flows from existing TUFLOW model to HECRAS | Hydraulics<br>Existing/ Post<br><br>Existing and Post Piers<br><br>Cycleway bridge incorporated | | RS2.5 Bridge<br>Location of existing piers along existing motorway near Duck Creek (used as a reference point supplemented by bridge drawing for pier locations)<br><br>Cycleway bridge details | Duck River |

Note: Cross sections obtained from LIDAR may not accurately represent invert levels due to the presence of water.

# Appendix 2

## Data Compilation – Drainage

INSET




6000

Hill Road

7000

8000

Homebush Bay Drive

***LEGEND***

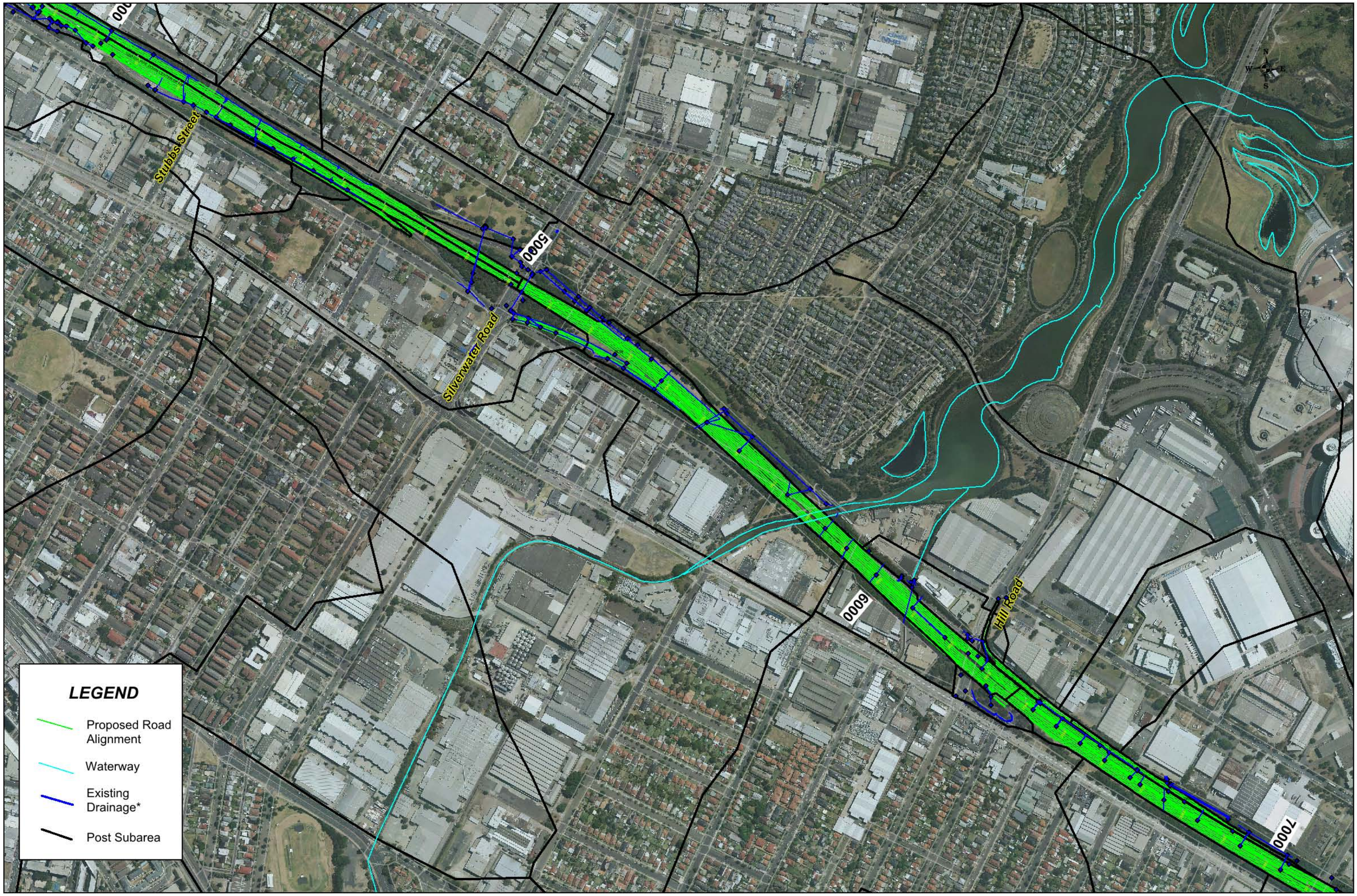
- Proposed Road Alignment
- Waterway
- Existing Drainage*
- Post Subarea

* Obtained from a range of sources

0 150 300
metres

SMEC

**WestConnex EIS - Flooding Component**
**Figure B1: Existing Drainage**

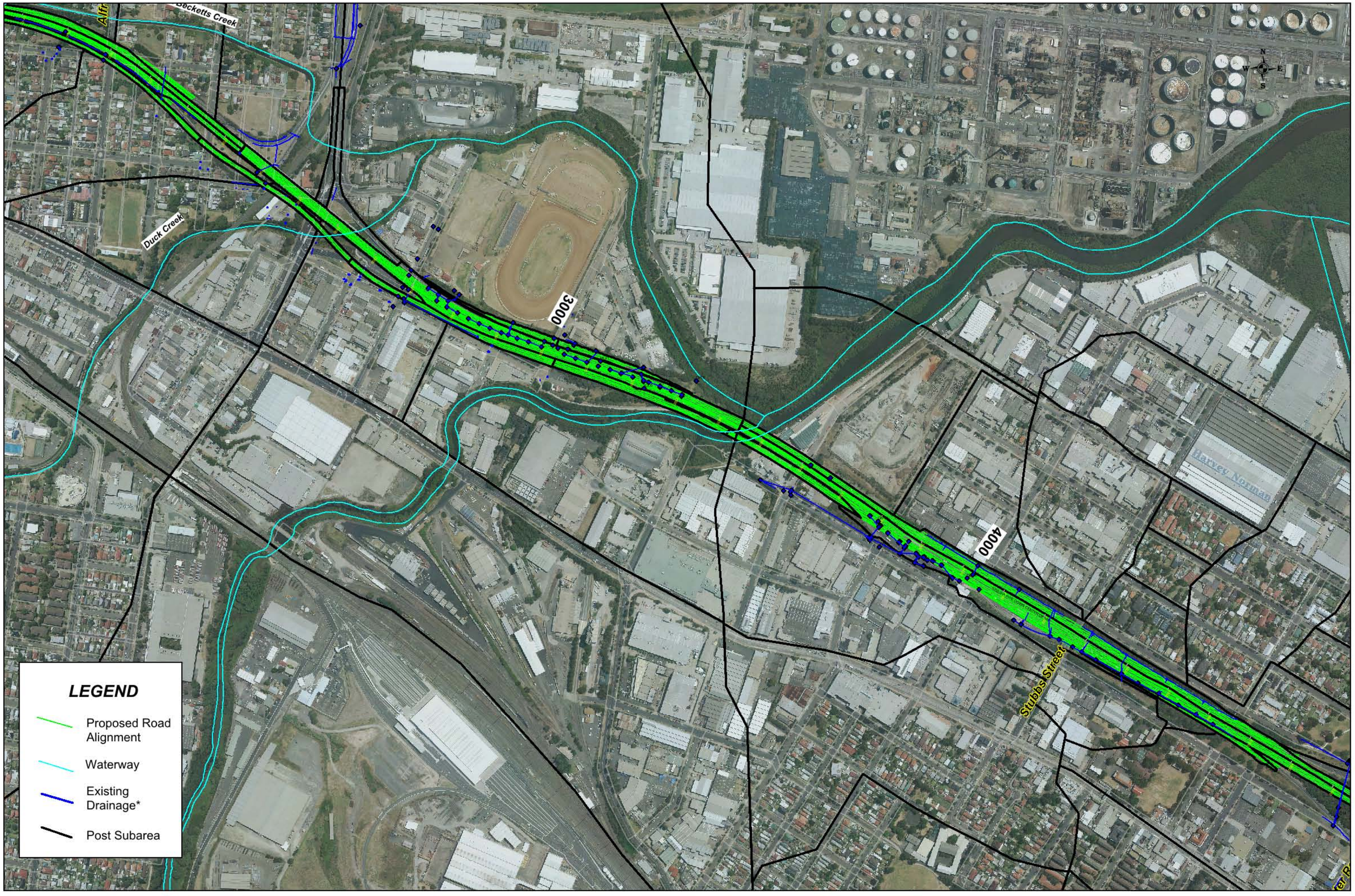



* Obtained from a range of sources

0 150 300
metres

SMEC

**WestConnex EIS - Flooding Component**
**Figure B2: Existing Drainage**

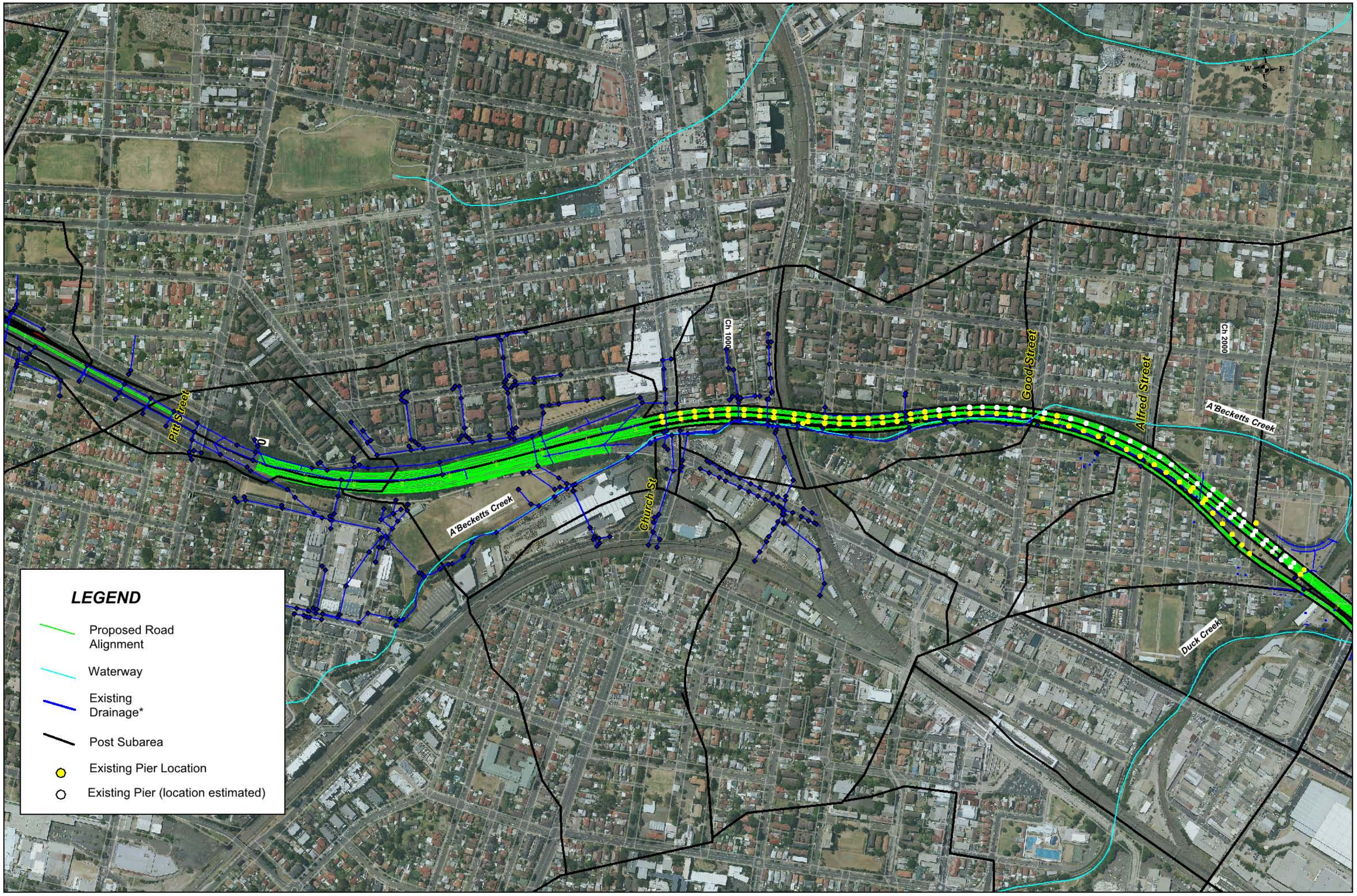



* Obtained from a range of sources

0 150 300
metres

SMEC

**WestConnex EIS - Flooding Component**
**Figure B3: Existing Drainage**




* Obtained from a range of sources

0 150 300
metres

SMEC

**WestConnex EIS - Flooding Component**
**Figure B4: Existing Drainage**