

Perth Airport 

# Master Plan 2020

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APRIL 2020





Perth Airport



# Section 8: **Services**

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The safe, effective and efficient operation of the Perth Airport estate depends on a reliable and adaptable network of power, water, sewerage, gas and communications infrastructure.



## 8.1 Introduction

The safe, effective and efficient operation of Perth Airport and the activities within the estate depend upon having reliable access to services including power, water, drainage and telecommunications. Perth Airport has developed strategies to ensure these services are reliable and available to meet current requirements as well as being adaptable to the growing needs of the airport as demand increases.

Perth Airport operates its own internal power, water, waste water and communications networks, integrating with the State's systems at the estate boundary. Perth Airport also controls stormwater drainage running through the estate. Gas and commercial telecommunications are provided throughout the estate by external suppliers. The power supply is sourced from the Western Power grid, supported by emergency power backup units to ensure that the airport can continue to operate during external power supply interruptions.

## 8.2 Stormwater Drainage

Stormwater management is required to minimise storm and flood risks that include personal harm, environmental harm, physical damage to infrastructure, and interruption or cancellation of aviation and non-aviation operations.

Perth Airport is responsible for the provision and management of stormwater infrastructure, both piped and open channel, within the estate.

Subject to the suitable management of inflows into the estate to the legacy 1997 levels, Perth Airport also controls outflows from the estate into external infrastructure to the peak flow rates as they were in 1997.

As development occurs, infrastructure will be provided to meet the inflows and peak stormwater storage requirements from upstream sources, for 1997 levels, and provide transmission and relevant peak stormwater storage for runoff from all new development and infill within the estate, again to the 1997 legacy levels.

Perth Airport has undertaken detailed stormwater modelling of the current network. With the 1997 levels providing the baseline for monitoring peak flows from the estate, an ultimate concept network has been prepared for the future development of the estate.

Careful planning and control of stormwater will allow Perth Airport to manage associated safety and environmental outcomes, while also managing potential impacts and risks to aviation and non-aviation activities.

### 8.2.1 Stormwater Management

There are two open drainage channels that run through the airport estate. Prior to Perth Airport taking over management of the airport in July 1997, the Water Corporation administered the drainage infrastructure. Perth Airport now manages these drains within the estate, along with all other stormwater infrastructure.

Perth Airport liaises with the Water Corporation and surrounding Local Governments about long-term planning and proposed changes to common stormwater infrastructure.

### 8.2.2 Existing Stormwater Network

Perth Airport is located on a coastal plain that sits between the Darling Scarp (Perth hills) and the Indian Ocean. The coastal plain covers over 100,000 square kilometres and has 30 major stormwater runoff catchments that ultimately drain into the ocean via the Swan River. The airport estate sits within two of those major catchments, with local stormwater draining to a main drain in each catchment that ultimately flows into the Swan River.

The two drainage channels within the airport estate are referred to as the Northern Main Drain (NMD) and the Southern Main Drain (SMD).

The NMD catchment (2,332 hectares) and the SMD catchment (2,355 hectares) both extend from the top of the Darling Scarp down to the Swan River. The airport estate is sited as close as 450 metres from the Swan River and makes up 43 per cent of the total NMD catchment and 35 per cent of the total SMD catchment. There are two other smaller catchments on the estate, referred to as the Fauntleroy Avenue and North Eastern catchments, which are mostly piped.

The stormwater catchments within the estate are shown in Figure 8-1.

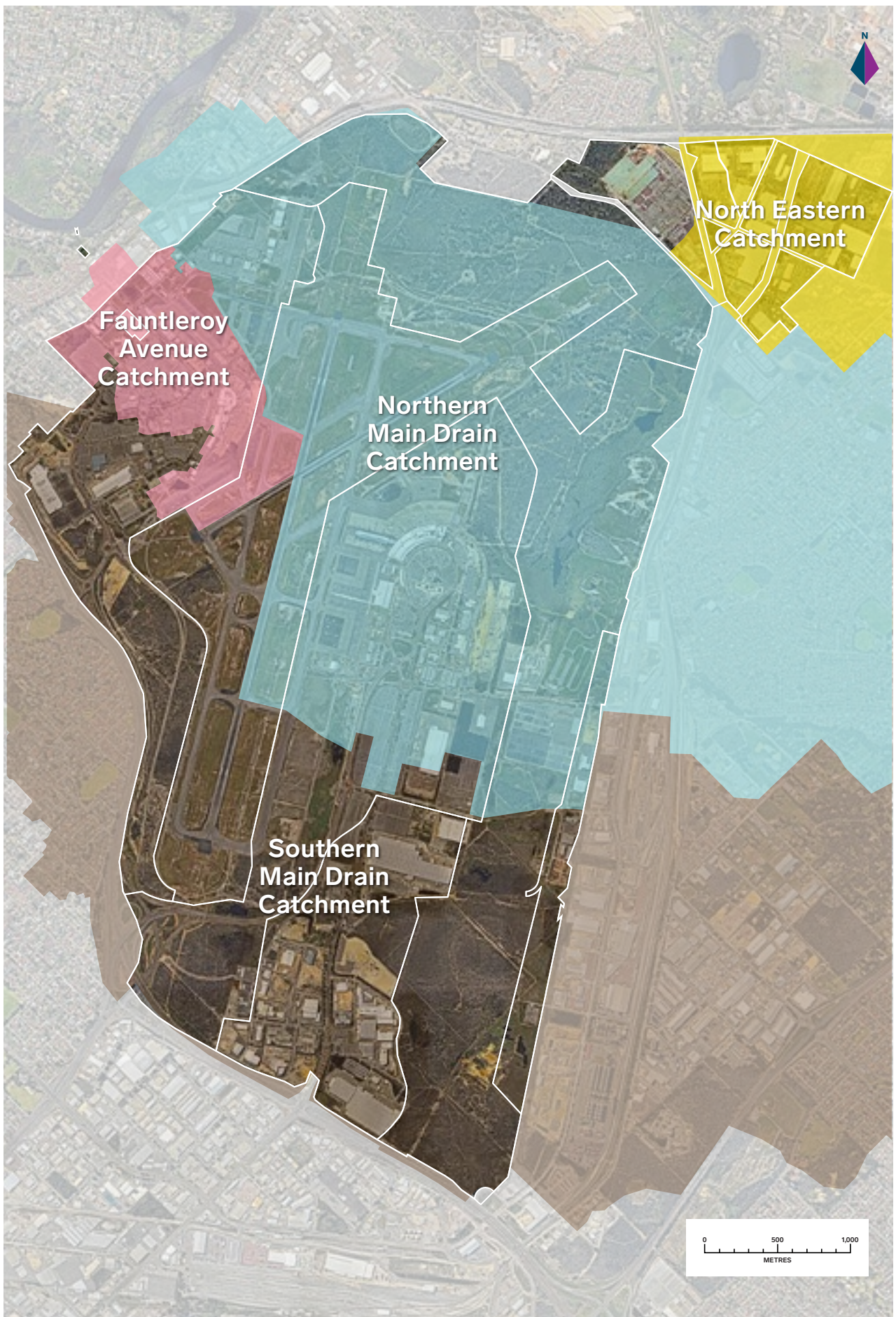


Figure 8-1 Perth Airport water catchment boundaries  
Source: Perth Airport

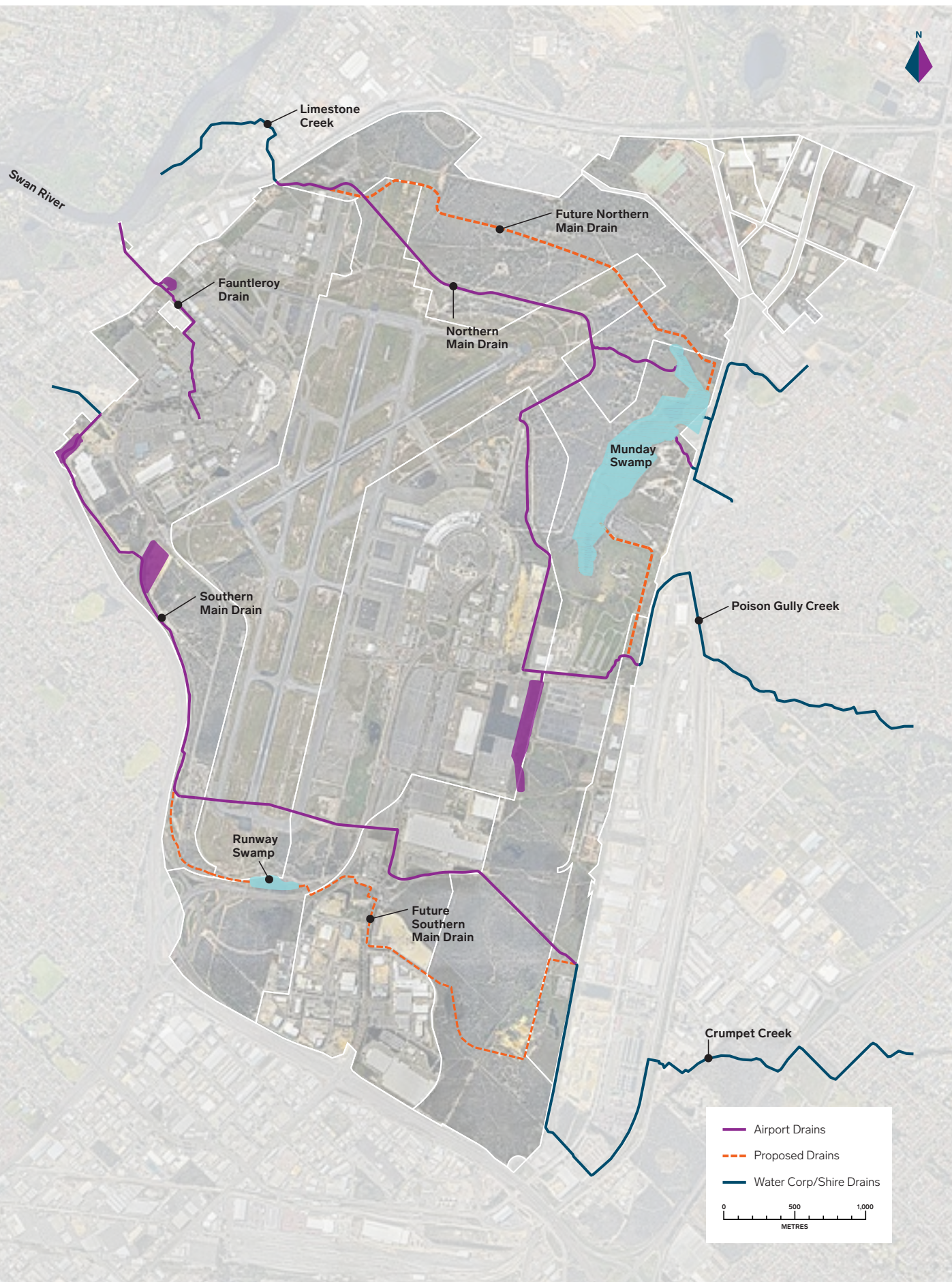


Figure 8-2 Perth Airport major stormwater drainage systems  
Source: Perth Airport

Upstream of the estate, the NMD catchment consists primarily of residential areas, while the SMD catchment is also primarily residential but with an industrial area just outside the estate to the east. Downstream of the estate, the areas for both catchments are a mix of residential, commercial and light industry.

The major stormwater drainage systems within the estate are shown in Figure 8-2.

#### 8.2.2.1 Northern Main Drain

The NMD is an open unlined channel for most of its length through the airport estate. It drains three open channels that cross the eastern boundary: Poison Gully, which has its source near the top of the Darling Scarp, and two Water Corporation scheme drains. The two Water Corporation scheme drains that enter the estate discharge directly into Munday Swamp. During times of high flow, the NMD on the airport reaches capacity and overflows into the southern end of Munday Swamp. When Munday Swamp reaches capacity, it overflows at its northern end and drains into the NMD.

Within the estate, the NMD drains the majority of the Airport Central Precinct, the majority of the existing cross runway (06/24), just under half of the existing main runway (03/21), a small portion of the Airport West Precinct, and the Airport North Precinct south of Kalamunda Road.

Perth Airport administers the drain within the estate, the Water Corporation administers its two scheme drains and the City of Kalamunda manages Poison Gully upstream of the estate. The City of Swan manages the NMD downstream of the estate (where it is known as Limestone Creek).

#### 8.2.2.2 Southern Main Drain

The SMD is an open unlined channel for most of its length through the estate. It drains Crumpet Creek which has its source near the top of the Darling Scarp.

The SMD drains the Airport South Precinct, just over half of the existing main runway (03/21), the majority of the Airport West Precinct, some areas of Tonkin Highway and small areas of the neighbouring suburbs of Redcliffe and Cloverdale. It traverses the airside area and runs under the south end of the existing main runway (03/21).

Perth Airport manages the drain within the estate, the Water Corporation manages it downstream of the estate, and the City of Kalamunda manages the drain upstream (where it is known as Crumpet Creek).

Within the past five years, three projects have been undertaken on the SMD which have provided upgraded capacity and additional storage detention basins to cater for the one-in-100 year storm events. In 2015, a 1,700 metre section was realigned along the western boundary (adjacent to Tonkin Highway) as part of the Gateway WA project and vegetated as a living stream. In 2016, a new downstream outlet was constructed at Central Avenue to replace the Brearley Avenue outlet that was closed as part of the Forrestfield-Airport Link project. A 200 metre section of the SMD within the estate that connects to the Central Avenue outlet is managed by the Water Corporation. Works associated with the Direct Factory Outlet construction in the Airport West Precinct, which was completed in 2018, required the realignment of a 1,000 metre section of the SMD, with 700 metres constructed as a vegetated living stream.

#### 8.2.2.3 Fauntleroy Avenue Catchment

The Fauntleroy Avenue Catchment is a small catchment within the estate. It is an underground piped network for the majority of its length. The network starts in the vicinity of Terminal 3 and Terminal 4 and drains directly to the Swan River in a pipeline managed by Perth Airport.

This catchment drains Terminal 3, Terminal 4, part of the terminal aprons, the nearby car parks and part of the General Aviation Area, all of which are in the Airport West Precinct.

#### 8.2.2.4 North East Catchment

The North East Catchment is an underground piped network which has its upper reach located mostly within the estate. The catchment drains the part of the Airport North Precinct north of Kalamunda Road. This area is an industrial area, with some flows entering the estate from an adjacent industrial area and a nearby residential area.

The downstream estate boundary is the Great Eastern Highway Bypass. From the airport discharge point, the stormwater drains north into the Helena River which in turn drains into the Swan River.

Perth Airport manages the catchment within the estate, the City of Kalamunda manages the small section upstream, and the City of Swan manages a small section upstream and also the downstream section outside of the airport estate.

#### 8.2.2.5 Gate 4 Catchment

The Gate 4 catchment is a small piped network that drains to a retention basin where water is infiltrated into the ground or evaporates.

### 8.2.3 Drainage System Considerations

The development of the drainage system within the estate takes into consideration:

- external system capacity (upstream and downstream),
- internal system capacity,
- modifications required for future land uses,
- design criteria to manage a one-in-100 year storm event for the existing runways (main runway 03L/21R and cross runway 06/24), the proposed new runway (03R/21L), taxiways and the terminal buildings,
- design criteria to manage a one-in-50 year storm event for major access roads, aprons and short-term car parking,
- suitable service levels for other infrastructure and land development, based on stormwater industry standards, and
- managing environmental impact from airport and commercial development operations.

#### 8.2.3.1 External System Capacity

Prior to the privatisation of the airport in 1997, the Water Corporation administered the NMD and SMD. As part of this management, land within the estate was used for the detention of stormwater due to stormwater infrastructure limitations downstream of the airport. Perth Airport now administers this legacy of detaining stormwater volumes generated upstream, based on 1997 levels.

Construction of the new runway (03R/21L), together with the planned development of the airport estate, will result in alternative uses for some of the land that has historically been used for stormwater detention purposes. It is therefore essential that upstream authorities continue to increase detention volumes to provide suitable storage for all stormwater volume increases generated by off-airport developments since 1997.

Alternatively, approval would need to be obtained to increase outfall capacity to match inflow from upstream catchments as a minimum, and ideally allow for a reasonable proportion of run-off generated on the airport site to be disposed of in the main drains. Perth Airport will continue to work with the Water Corporation and the surrounding Local Governments to achieve the required outcomes through increased upstream compensation and/or downstream outfall capacity to reduce the amount of compensation required on the airport estate.

#### 8.2.3.2 Internal System Capacity

Extensive stormwater modelling has been undertaken to develop the Perth Airport Master Drainage Strategy. This Strategy is used to inform land use planning decisions and detailed stormwater designs to help ensure that the network is integrated and keeps peak flow discharge off the estate to the 1997 values, subject to inflows remaining the same.

The NMD has a number of limitations which contribute to the potential for localised flooding in peak flow events, including:

- limited open channel capacity based on size,
- gradient of the drain being as flat as one in 3,300,
- various culverts along the drain have insufficient capacity for the larger flows,
- the drain downstream of the airport has several restrictive culverts and bends, and
- maintenance of the drain downstream of the estate is not under Perth Airport control.

The SMD has a number of limitations which contribute to the potential for localised flooding in peak flow events, including:

- limited open-channel capacity based on size,
- gradient of the drain being as flat as one in 2,500,
- the 1,200 millimetre diameter pipe under the main runway (03L/21R) and Horrie Miller Drive has insufficient capacity for the larger flows,
- the drain downstream of the airport has several restrictive culverts and bends, and
- maintenance of the drain downstream of the estate is not under Perth Airport control.





### 8.2.4 Drainage Network Development Plan

The Perth Airport Master Drainage Strategy has been updated to include changes to land use on the estate based on the 2014 Perth Airport Master Plan. The 2017 version of the Strategy identifies the modifications that will be required for the NMD, SMD and major pipe networks to enable the planned and future development of the estate.

Previous work by the Water Corporation assumed that, in addition to the run-off generated on site, Perth Airport would accommodate a substantial amount of stormwater on the airport estate as part of the legacy 1997 arrangements.

The Master Drainage Strategy identifies possible infrastructure works including:

- various options for flood mitigation on the airport estate,
- the need for detention basins,
- realigning parts of the NMD and SMD, and
- constructing a 'living stream' as part of the realignment works for the NMD and SMD.

The living stream is an open channel that mimics the characteristics of natural streams with suitable tree canopy, understorey and in-stream vegetation. Local provenance vegetation is used where suitable. Water quality improvement is achieved by aquatic vegetation and natural biological processes helping to oxygenate the water and removing nutrients plus non-nutrient contaminants. The development of living streams within the estate supports the natural surface water management and control of peak flows, as well as improving water quality prior to discharge of the stormwater off the estate. Living streams also improve the general amenity of the area.

The run-off created by Perth Airport's ongoing development needs to be managed. The option of upgrading infrastructure downstream of the airport estate relies on the co-operation and timeliness of other parties. Initial system upgrades are likely to be undertaken on the airport estate, however discussions with State and Local Government authorities will continue to achieve the best overall outcome.

#### 8.2.4.1 Northern Main Drain

Modifications to the alignment and the configuration of the NMD are planned to facilitate Perth Airport's ongoing development. The current NMD alignment passes through land required for:

- the new runway (03R/21L),
- extensions of terminals and a new terminal in the Airport Central Precinct,
- proposed extension of the cross runway (06/24), and
- development of the Airport North Precinct.

As detailed in Section 4, Perth Airport is currently seeking Commonwealth approvals for the construction and operation of the new runway. The new runway (03R/21L) is planned to be operational between 2023 and 2032, subject to demand.

As part of the new runway project, the NMD will need to be realigned to facilitate the safe operation of the new runway and to provide adequate drainage capacity during storm (1 in 100) and flood events. The realignment of the drainage network includes key design features of a pollution capturing basin, an infiltration basin, and measures to control the velocity and quality of existing water flow into Munday Swamp. The design of the new infrastructure also ensures that the peak water levels and inundation times will remain close to the existing scenario and within tolerance levels of the wetland flora and fauna.

Aboriginal Traditional Custodians have indicated that Poison Gully historically drained into Munday Swamp. The drainage works planned as part of the new runway project will realign and restore the original natural water flows, with a restored connection of Munday Swamp upstream to Poison Gully Creek (through the eastern hills area) and downstream to Limestone Creek (which connects to the Swan River).

Additional stormwater storage is planned for the development of the Airport North Precinct.

#### 8.2.4.2 Southern Main Drain

Modifications to the alignment and the configuration of the SMD will be required to allow Perth Airport's ongoing development.

The current SMD alignment passes through land required for:

- the new runway (03R/21L), and
- development of the Airport South and Airport West precincts.

The planned development of these areas will incorporate a realignment of the SMD. Provision for additional storage is planned for the Airport Central, Airport South and Airport West precincts. The continued detention of the legacy 1997 storage volumes will be incorporated into the SMD network.

#### 8.2.4.3 Fawcett Avenue Catchment

As consolidation of commercial air services continues, with the relocation of Qantas operations to the Airport Central Precinct in 2025, land uses in the Airport West Precinct will change and complementary upgrades to the drainage system will be progressively undertaken.

#### 8.2.4.4 North East Catchment

The stormwater network within the North East Catchment consists of a pit and pipe system with three detention storage basins. The development of the network in this area was completed in 2015.

#### 8.2.4.5 Environmental Considerations

Realignment of both the NMD and SMD as living streams through the airport estate will further provide a valuable function in flood control, opportunities for biodiversity management and protection, and an improved level of ambience for visitors and employees of the airport estate.

#### 8.2.4.6 Wetlands

There are several wetland areas within the airport estate, including Munday Swamp which is part of the current hydrological regime at the airport.

For most of the time, wetland areas only obtain surface water from their own localised catchments or rising ground water following winter rains. However, in times of high flow, wetland areas may receive varying amounts of overflow water from the NMD or SMD.

The airport drainage design endeavours to minimise adverse impacts on the wetlands on the airport estate resulting from changes to the hydrological regime, and potential contamination from stormwater. The redirection of the high flows of the NMD through Munday Swamp, as part of the new runway project, has been designed to keep peak water levels and inundation times close to the existing scenario and within tolerance levels of the wetland flora and fauna.

#### 8.2.4.7 Pollution Control

Pollution control is an integral part of any drainage system. All developments at Perth Airport must satisfy the requirements of the Airports (Environment Protection) Regulations 1997.

The greatest potential source of pollution related to airport operations has been identified as oil and fuel spills during aircraft servicing and refuelling. Hydrocarbons from these areas are intercepted prior to reaching the main drains or the Fauntleroy Avenue catchment outlet. Hydrocarbon interceptors are specified on all new apron construction projects that provide bays for aircraft refuelling operations. All apron constructions include these measures. Regular monitoring and maintenance are undertaken to ensure operational efficiency is continued.

Pollution control is also required to be implemented directly by tenants. This may be in the form of ensuring appropriate spill kits are available, hydrocarbon interceptors or the installation of water-quality protection infrastructure and procedures. These requirements are administered through tenant Environmental Management Plans and tenant audits.

#### 8.2.4.8 Water Quality

Management of water quality is a requirement of Perth Airport under the AEP Regulations. Management measures will continue to be implemented to mitigate any impact on water run-off and quality resulting from development on the airport estate.

Water quality at Perth Airport is monitored on a quarterly basis. Perth Airport has a large groundwater monitoring bore network and surface water monitoring locations that are consistently sampled during each monitoring event. Results are compared to the AEP Regulations and a quarterly monitoring report is provided to Department of Infrastructure, Transport, Regional Development and Communications.

Estate tenants also undertake water quality monitoring, and this is reported to Perth Airport as part of each tenant's Annual Environment Report. Further information on Perth Airport's water quality monitoring program is provided in Section 9.

The original main drains were designed and constructed for conveyance of stormwater with limited improvements in water quality. The concept for the SMD and NMD is to construct them on new alignments as living stream vegetated open channels. The aim is to provide a healthy ecosystem for microbes to perform bioremediation and biotransformation of environmental pollutants such as hydrocarbons (e.g. oil), nutrients and various metals. This will provide further opportunity to improve water quality.

Perth Airport design guidelines require most individual lots on the estate to retain and infiltrate the first 15 millimetres of rainfall from each storm. This helps to provide at-source pollution control and therefore provides ecological protection for receiving water ways. This is in line with the State guidelines for stormwater management in urban areas.

#### 8.2.4.9 Hydrogeology

Perth Airport is located over the Cloverdale groundwater flow system. The groundwater beneath the estate is an unconfined water table within the Bassendean Sand (the surface geological unit) and within the mostly unconfined Guildford Formation geological unit below that sand.

The general direction of the groundwater flows is north-west, towards the Swan River. The groundwater level sits at a shallow depth (surface to four metres below ground level) across the estate. Soil conditions vary, and seasonal changes are generally experienced, with various areas of the airport estate becoming inundated or water logged in the winter months.

Site specific assessment of groundwater conditions will be required when proposed developments are likely to be impacted by groundwater.

### 8.3 Water Supply

The Water Corporation provides potable water to the majority of the airport estate through three main connections. These connections feed the requirements of the internal airport water ring main system. The ring main provides redundancy to the supply network for upgrade works, maintenance and unplanned events.

The land north of Kalamunda Road, within the Airport North Precinct, is serviced directly from the Water Corporation network to the individual tenants. Within the Airport North Precinct there are multiple connections to the Water Corporation network, providing redundancy for this area.

Works carried out to replace all valves and water meters for the three incoming main water lines were completed in 2018 in conjunction with the Gateway WA project and the Direct Factory Outlet construction. Backflow devices were also fitted to achieve conformance with required standards. Upgrades to main line services were achieved in conjunction with work for the Terminal 1 forecourt and the preliminary works for the Airport Central Train Station, completed in 2016.

#### 8.3.1 Water Supply Development Strategy

A Water Supply and Waste Water Planning Study has identified and characterised future demand and considers water supply options including mains, groundwater and wastewater reuse. The study included a 30-year upgrade works program, guided by development demands which are based on growth in passenger numbers, proposed land developments and asset end-of-life replacement.

Perth Airport will continue to work with the Water Corporation to provide potable water to the airport estate. The works required to fulfil the preliminary development strategy are shown in Figure 8-3 and will involve the creation of a series of additional ring mains within the airport estate to improve the continuity of supply and water pressure.

Perth Airport is investigating opportunities for the reuse of stormwater to alleviate the reliance upon scheme water.

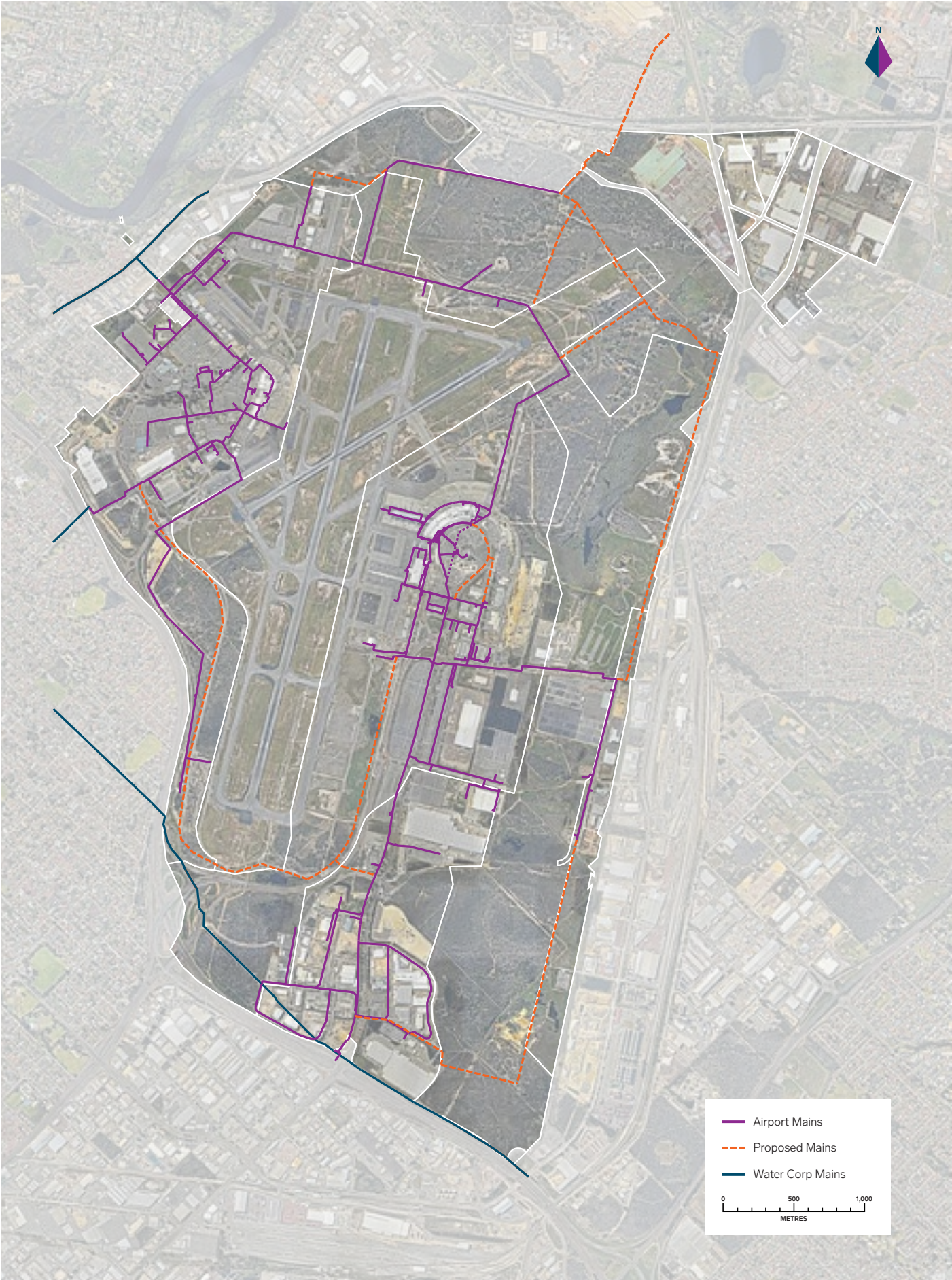


Figure 8-3 Perth Airport potable water mains  
Source: Perth Airport

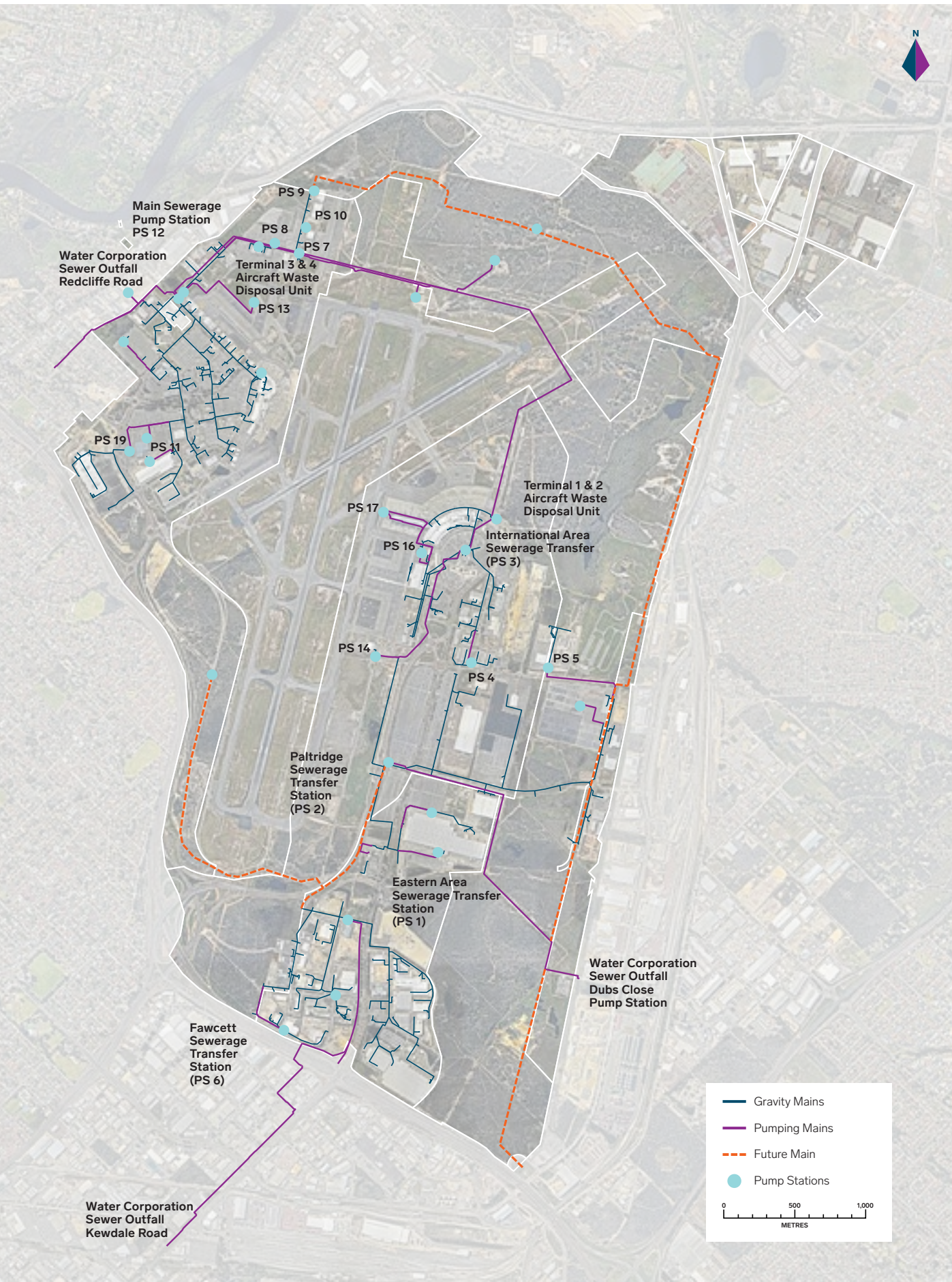


Figure 8-4 Perth Airport sewerage systems  
Source: Perth Airport

## 8.4 Sewerage System

The Perth Airport sewerage system consists of a mixed network of gravity and pumping mains (see Figure 8-4), the majority of which discharges into the Water Corporation network at three locations around the estate. Waste water from the land that is north of Kalamunda Road, in the Airport North Precinct, is conveyed to the Water Corporation network via a combination of gravity and pumping mains, while the other three discharge points use pumping infrastructure.

The land that is south of Kalamunda Road currently has minimal development. Developments in this area currently pump their waste water to the Airport West Precinct.

The Airport West Precinct has a sewerage system with a single discharge point, however the Water Corporation has placed a maximum limit on that outflow. Perth Airport is working with the Water Corporation to manage outflows and develop a long-term strategy.

The Airport Central Precinct has a series of linked pumping stations that discharge via a pumped main to the Water Corporation discharge point adjacent to the eastern airport boundary at Dubs Close.

The Airport South Precinct has two separate sewerage networks: the southern industrial area discharges to the south, and the rest of the precinct discharges to the east via the Airport Central pumped main.

There are also various lease holders that have private pumping mains discharging into Perth Airport's system. Some lease holders within the Airport North Precinct maintain onsite sewerage treatment systems as they do not have the ability to connect to the main network.

Upgrading of infrastructure has begun, with works in 2015 increasing storage capacity at the International Area Sewer Transfer in the Airport Central Precinct and the Helicopter Sewer Pump Station servicing the General Aviation Area. An upgrade of the pumping main between Pump Station 3 and the Paltridge Pump Station 2 was also completed in 2015. Installation of flow metering on the principal sewer pump stations in 2016 has provided monitoring of peak flows and enhanced real time management.

### 8.4.1 Sewerage System Development Strategy

A sewerage system development strategy has been developed by Perth Airport. The strategy includes an upgrade works program based on projected demand, which is guided by passenger numbers, proposed land developments and asset end-of-life replacement.

Perth Airport will continue working with the Water Corporation on capacities and quality of sewage being discharged from the estate.



## 8.5 Power Supply

The Perth Airport power distribution system operates as an embedded network. The electricity distribution network is managed by Perth Airport.

The main portion of the airport estate is currently supplied by two Western Power grid connections and internal generation as follows:

- Western Power's Belmont Zone substation to the west supplies power to the Dunreath substation in the south of Airport West Precinct,
- Western Power's Munday Zone substation on the airport eastern boundary, which supplies power into the Airport Central Precinct, and
- a natural gas fired co-generation power plant with waste heat recovery providing electrical power generation, space heat and cooling services to Terminal 2 and the Terminal 1 Domestic pier.

The Eastern Metropolitan Regional Council (EMRC) waste to energy wood pyrolysis power generation plant, located one kilometre north of the estate, is due to commence operations in 2020 and will supply power into the airport grid.

Perth Airport is also undertaking a feasibility assessment of future solar power from the introduction of photovoltaic cells (solar farm) within the Airfield Precinct and/or Airport North Precinct. The installation of solar power for Perth Airport facilities, and increased use on tenanted facilities, will become increasingly important to supplement power from the Western Power grid.

The area of the Airport North Precinct that is north of Kalamunda Road is supplied directly from Western Power's distribution network.

A ring main distribution around the airport estate provides a high level of redundancy in that a single section of faulted network can be switched out and power restored to most customers by additional switching.

Emergency backup power to the terminal and essential airfield operations is provided by:

- a co-generation power plant which provides back-up power to the Terminal 2 and Terminal 1 Domestic,
- Terminal 1, Terminal 3 and Terminal 4 have backup diesel generators,
- backup generators maintained for airfield lighting, and
- car park areas which have backup generators.

Extensive work on the High Voltage power supply system resulted in installation and commissioning of five new ring main units across the estate to support the aviation and commercial developments.

In 2013, Perth Airport constructed a co-generation plant in the Airport Central Precinct to support Terminal 1 International, the Terminal 1 Domestic pier and Terminal 2. To continue capacity enhancement for the Airport Central Precinct, between 2016 and 2018 Perth Airport installed a further seven ring main units, seven major transformers, new feeder connections and an additional diesel-powered back-up generator.

Perth Airport is progressively replacing all airside and landside lighting with highly energy efficient LED light fittings.

### 8.5.1 Power Supply Development Strategy

A High Voltage Electrical Master Plan has been completed to consider an upgraded works program out to 2044 based on projected passenger growth, proposed land developments and asset end-of-life replacement as shown in Figure 8-5.

Electrical load growth associated with Perth Airport estate development will be supplied through the Western Power grid and by new embedded generation.

Option planning with Western Power for additional grid power supply has commenced.

Feasibility studies for embedded generation such as solar PV, a green waste bio-gas plant and grid storage batteries are underway.

An Energy Strategy may also be affected by WA Energy Strategy Transformation Reform process that will provide network and market guidance on distributed energy resources.

The proposed new parallel runway will require relocation of existing Western Power 132kV powerlines on the eastern boundary of the airport. Option planning for this relocation has commenced.

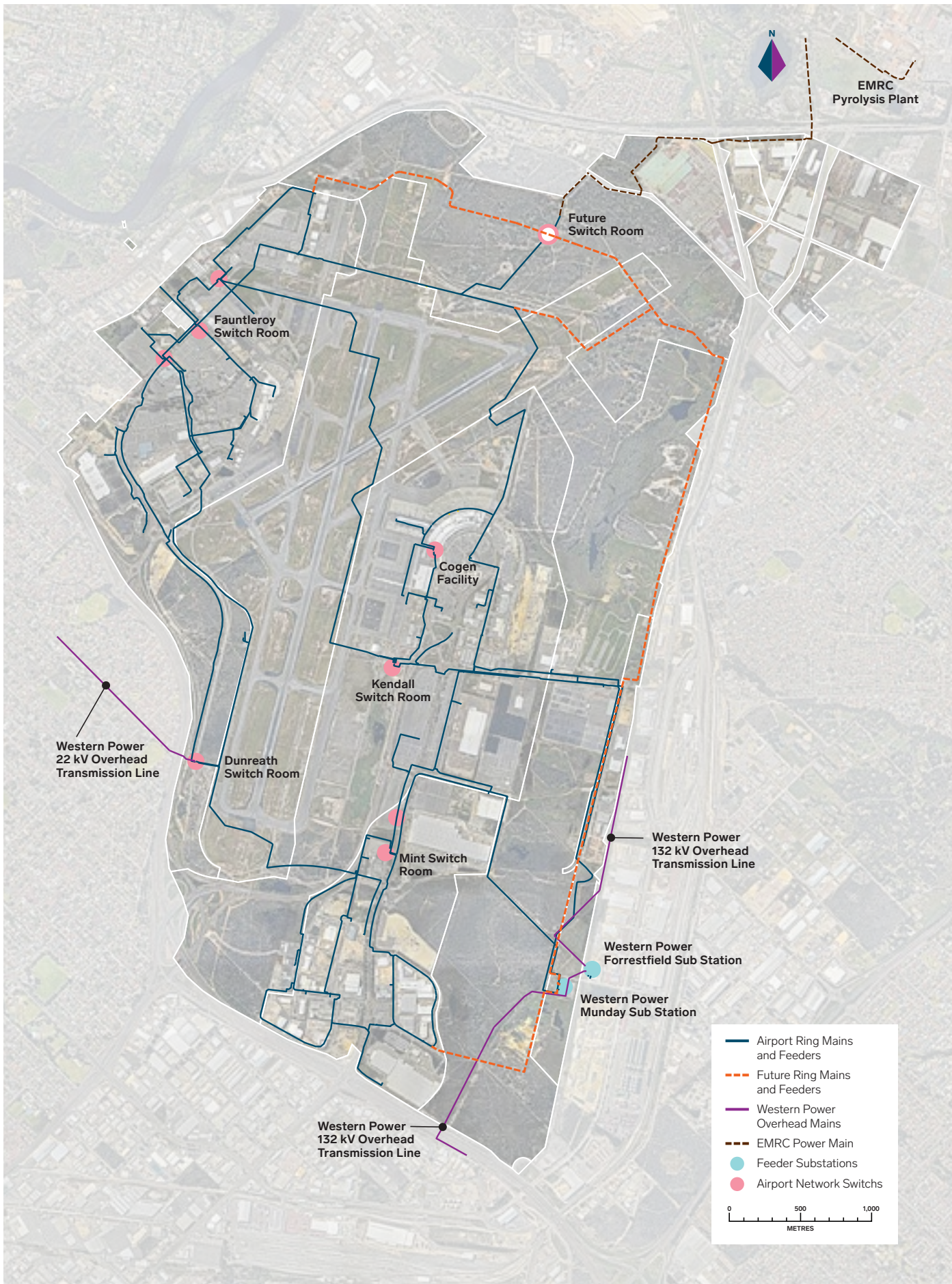


Figure 8-5 Perth Airport high voltage power supply network  
 Source: Perth Airport

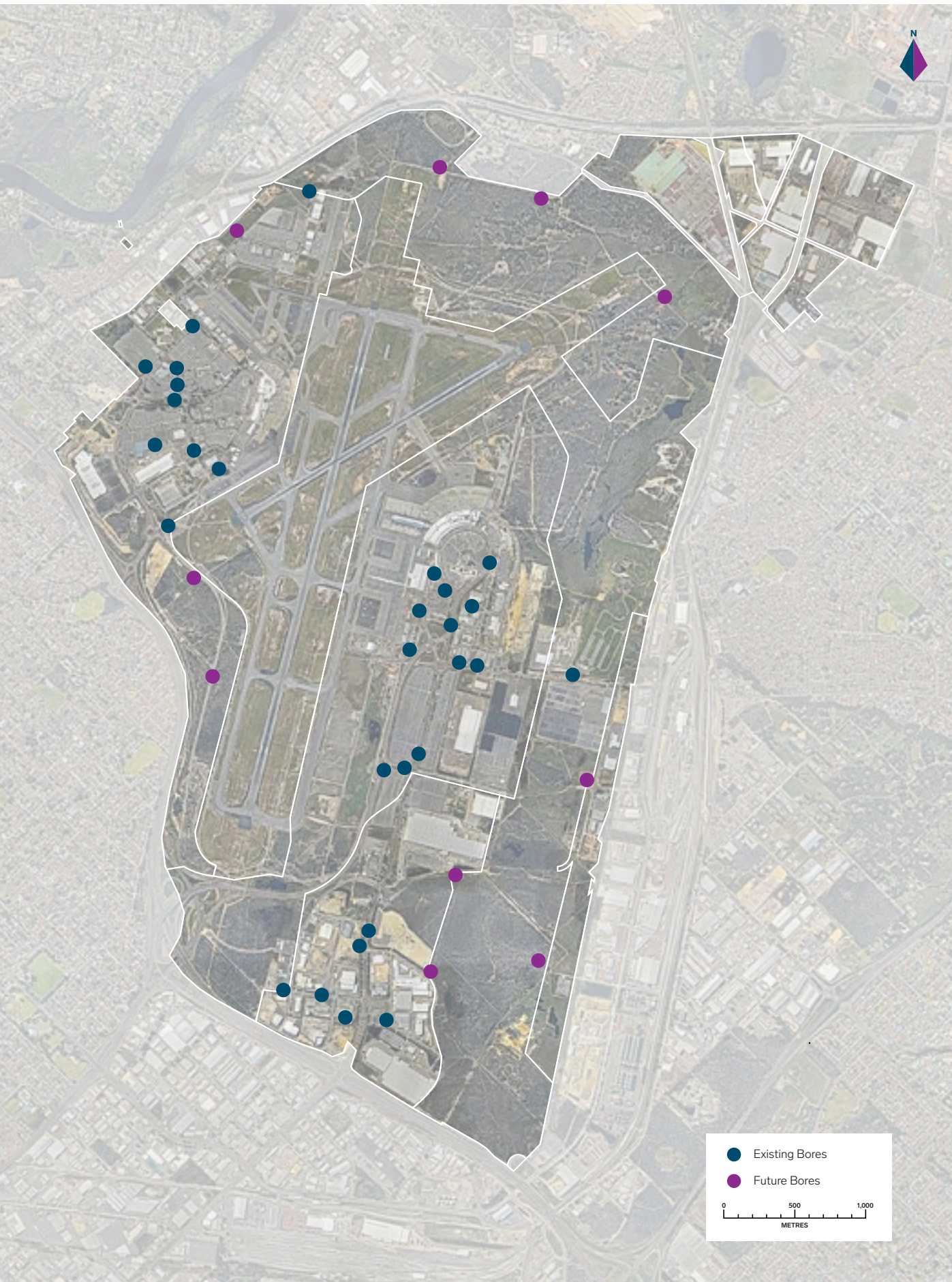


Figure 8-6 Perth Airport irrigation bores  
Source: Perth Airport



## 8.6 Irrigation

The majority of irrigation within the estate is sourced from groundwater. As well as irrigating landscaped areas, groundwater is used for some construction activities. Perth Airport recognises that groundwater supplies in the area are limited and therefore seeks to rationalise its use.

The Water Supply and Waste Water Planning Study (Jan 2017) has considered the future irrigation demands, including groundwater monitoring data, resource assessments and future uses of groundwater.

Figure 8-6 identifies the current and future groundwater bores within the airport estate. The extent of current groundwater usage by Perth Airport is approximately equivalent to irrigating 70 hectares of grassed playing fields per year in the Perth area.

Irrigation systems were extended and re-routed to support landscaping in the ongoing development areas, in particular the Terminal 1 forecourt and Airport Drive (completed in 2016) and Dunreath Drive in the Airport West Precinct (completed in 2018). Additional bores were established to support the extended landscaping regime.

## 8.7 Gas Supply

Gas supply to the airport is currently provided by Synergy through a piped network mostly owned and maintained by ATCO Gas Australia. The existing system includes gas reticulation mains along Horrie Miller Drive, Brearley Avenue and Fautleroy Avenue.

A high-pressure gas main runs along the western side of Horrie Miller Drive and services the Airport South Precinct, Airport Central Precinct and surrounding developments. This line is reticulated from a gas main running adjacent to Tonkin Highway at the southern end of the airport and may need to be upgraded at some time in the future as demand dictates. A further gas pressure main supplies airport tenants located north of Kalamunda Road.

There are two high-pressure gas transmission lines that run through dedicated easements on the estate. These are known as the:

- Parmelia Pipeline, which passes through a portion of the Airport North Precinct to the north of Kalamunda Road, and
- Dampier to Bunbury Natural Gas Pipeline, which runs from north of Kalamunda Road in the Airport North Precinct and then along the entire length of the eastern airport boundary.

Incoming gas supply lines were relocated as a result of the Gateway WA project in 2015 and Redcliffe Station construction, as part of the Forrestfield-Airport Link project, in 2018. Throughout 2018, internal gas distribution was extended to service the Direct Factory Outlet and adjacent development sites in the Airport West Precinct.



### 8.7.1 Gas Supply Development Strategy

In the longer term, additional natural gas capacity will be required on the airport estate as the planned consolidation of commercial air services to the Airport Central Precinct proceeds, more commercial development occurs, and if additional on-site gas-powered generation is installed.

To service this projected demand an additional gas main will be required. Discussions will be conducted with the relevant providers to ensure this additional service is correctly sized and delivered within required timeframes to support the airport development plans.

As shown in Figure 8-7, connections have been proposed by ATCO Gas to support the future development of the estate and enhance diversity of supply.

## 8.8 Communications

Reliable communication systems are necessary to ensure safe and efficient aircraft navigation and airport operations. Communications infrastructure within the airside boundary are primarily the responsibility of Perth Airport, although a substantial network of airside communication cables for control of navigational aids and associated communications is owned by Airservices Australia.

Perth Airport has an extensive network of communications systems consisting of air-to-ground and point-to-point radio communications utilising:

- high frequency transmitter and receiver stations,
- satellites,
- microwave links, and
- land-line communications via underground cables and optic fibre.

Commercial telecommunications are provided throughout the airport estate by various third-party service providers, such as Telstra, Optus and NBN Co Ltd, whose distribution utilises the Perth Airport duct networks or their own dedicated containment.

In recent years, Perth Airport's communication systems have been strengthened with the upgrading of data lines across the estate that support the monitoring of various systems in terminal, landside and airside locations.

In 2017, Airservices Australia completed an upgrade of its monitoring, control, navigation and surveillance systems across the airfield and linking to the Air Traffic Control tower and Air Traffic Services Centre.

In 2017, works commenced to establish the national broadband network (NBN) within the airport estate. The network became available to Perth Airport and estate tenants in 2019.

### 8.8.1 Communication Development Strategy

Communications systems will be upgraded as required to maintain or increase capacity and effectiveness in line with Perth Airport's IT Fixed Infrastructure Strategy. The Strategy considers development of communications across the airport through the establishment of additional cable/fibre containment, equipment rooms and integration with Fibre Distribution Centres. Perth Airport is also considering the benefits of wireless communications networks for connectivity to a wider range of facilities, including airport operations, facility monitoring and for some commercial applications.

## 8.9 Sustainability

Perth Airport has developed a Sustainability Strategy which references the water supply, wastewater, IT Fixed Infrastructure, drainage, power supply and environment strategies which have all been developed to reflect current requirements and anticipate future demand. The strategies include measures for Perth Airport to become more sustainable in the use of all major services. This will also have the benefit of limiting the impact that airport developments have on demand for service infrastructure outside the airport estate. Measures considered include:

- increased on site power generation, including options from more sustainable sources such as solar photovoltaic system, grid batteries, and airport waste to energy such as biogas generation,
- increased 'fit for purpose' water use, including the collection and reuse of storm water and reduction of ground water use from water sensitive landscaping and planting regime, and
- shared resources, such as large-scale power storage and co-generation plants (power, hot and cold water) will be explored.

Ongoing commercial development together with construction of new terminals and terminal expansions within the Airport Central Precinct will provide opportunities to include water, energy saving initiatives and incorporate renewable power generation, while innovative design features can be used to reduce service demand.

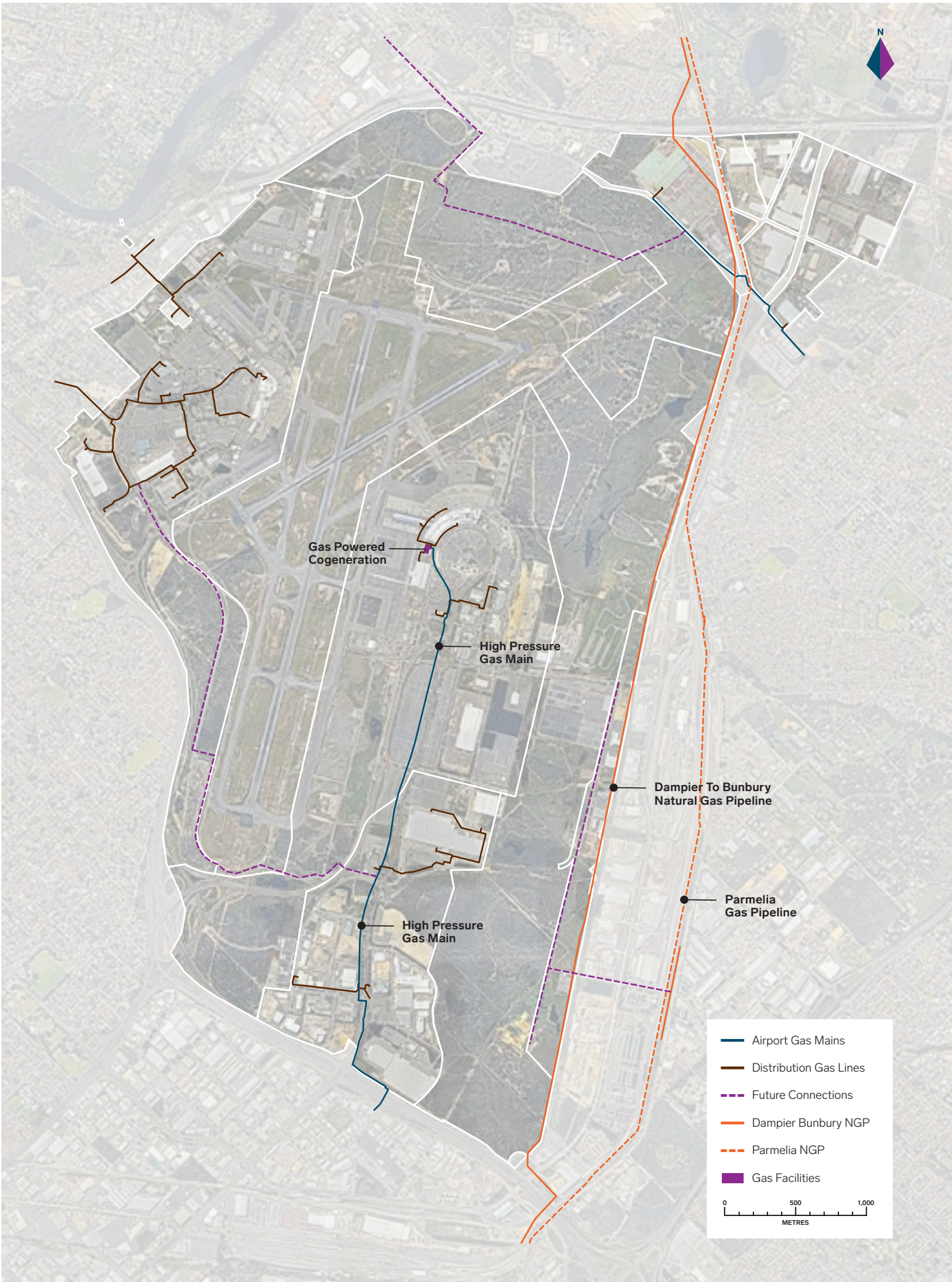


Figure 8-7 Perth Airport gas supply network  
Source: Perth Airport