Power Line Bushfire Mitigation Plan
Plan

June 2022

VICTORIA State Government

Melbourne Water makes a vital contribution to the famous Melbourne lifestyle through the supply of high-quality water, reliable sewerage services, integrated drainage and flood management services and by enhancing our waterways and land for greater community use.

Melbourne Water
Enhancing Life and Liveability

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1. Plan Authorisation

This Bushfire Mitigation Plan outlines how Melbourne Water manages our at-risk electrical assets to mitigate bushfire risk and ensure our assets are safe and reliable.

As the owner and operator of at-risk electrical assets Melbourne Water has prepared this plan in accordance with Section 83BA of the Electrical Safety Act 1998 and the Electrical Safety (Bushfire Mitigation) Regulations 2013, for acceptance by Energy Safe Victoria.

This plan is subject to annual review and submission to Energy Safe Victoria to ensure it describes current management regimes and processes, and to allow for continuous improvement.

Approved by:

Joanne Hunt

Joanne Hunt

Manager, Water & Sewerage Asset Management

2. Relevant Legislation

- Electrical Safety Act 1998
- Electricity Safety (Bushfire Mitigation) Regulations 2013
- Electricity Safety (Electric Line Clearance) Regulations 2020 (incorporating the Code of Practice for Electric Line Clearance 2020)

The Act requires the mitigation plan to include assets that are both:

1. Located in a Hazardous Bushfire Risk Area (HBRA); and
2. Classified as an At-Risk Electric Line

Hazardous Bushfire Risk Area is defined in the Electricity Safety Act 1998 as an area:

1. To which a fire authority has assigned a fire hazard rating of "high" under section 80, whether or not the area is an urban area; or
2. That is not an urban area (other than an area a fire control authority has assigned a fire hazard rating of "low" under section 80) 83A of the Act defines At-Risk Electric Line as an electric line (other than a private electric line) that is:
    a. Above the surface of land; and
    b. In a hazardous bushfire risk area.

Part 1 of the Act section 3 defines a private electric line as any low voltage electric line used to take electricity from the point of supply, whether or not that line is vested in an electricity supplier. Therefore this plan's main purpose is the management of **at risk** HV power line assets that are located in HBRA.

The plan also details assets other than **at risk** HV power lines that are:

1. Melbourne Water 22kV equipment connected to power lines included in Energy Safe Victoria's Rapid Earth Fault Current Limiter (REFCL) program area
2. Other overhead lines owned by Melbourne Water that are HV in a LBRA or LV (to provide Melbourne Water with an overall plan)

3. Plan Availability

This plan is available for public inspection, in accordance with section 83BA (a) and (b), following acceptance of the plan by Energy Safe Victoria. It is available on Melbourne Water's website and for viewing during normal business hours (8am to 5pm) on request at Melbourne Water's head office, 990 La Trobe St, Docklands, Victoria.

4. Introduction

Melbourne Water is a water authority solely owned by the Victorian Government. We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage rivers and creeks and major drainage systems throughout the Port Phillip and Westernport regions.

Melbourne Water is a significant land owner in the Port Phillip and Western Port regions managing 33,582 hectares of land and responsible for managing water supply, sewerage and

drainage assets, as well as natural assets such as rivers and creeks. These assets service 4.2 million people in an area spanning 12,800 square kilometres.

Melbourne Water owns and operates electrical assets in order to ensure the continuation of our core services. These assets include low and high voltage lines and over 495 poles. Of these assets the following are located in a Hazardous Bushfire Risk Area:

- Sugarloaf Reservoir Area (including associated Winneke plant) (HV)
- Cardinia Duffy's Lookout Picnic Area (LV)
- Silvan Reservoir (LV)
- Tarago treatment plant (LV)
- Upper Yarra Reservoir
- Bells Portal (HV)
- Devilbend Reservoir
- Montrose reservoir

The only Melbourne Water sites that have HV assets located in HBRA and therefore meet the definition of 'at risk lines' are:

- Sugarloaf Reservoir Area; and
- Bells Portal (Thompson Reservoir).

These lines are supplied by electricity distribution company AusNet Services.

This plan has been specifically designed for the 2.6 km of 11 kV lines (at-risk electric lines) in the Sugarloaf-Winneke area and 64m of 22kV line (at-risk electric lines) in the Bells Portal – Thompson dam area.

In addition to the regulatory requirements, this plan also provides some mitigation details for all Melbourne Water owned overhead lines. The intent of this inclusion is to provide internal clarity on overall risk management.

This Bushfire Mitigation Plan outlines how Melbourne Water manages our at-risk electrical assets to mitigate bushfire risk and ensure our assets are safe and reliable.

The following responses address the requirements of:

- the *Electricity Safety Act 1998* – Section 83BA – Submission of bushfire mitigation plans for acceptance; and
- the *Electrical Safety (Bushfire Mitigation) Regulations 2013* – Section 6 – Prescribed particulars for bushfire mitigation plans – specified operators.

5. Prescribed Particulars

5.1 Contact Details

Section 6 (a)

Name, address and telephone number of the specified operator

Melbourne Water Corporation

990 La Trobe St
Docklands Victoria 3008
Phone 131 722

Section 6 (b)

Position, address and telephone number of the person who was responsible for the preparation of the plan

Joanne Hunt
Manager, Water & Sewerage Asset Management, Melbourne Water
990 La Trobe St, Docklands, Victoria 3008
Email: Jo.Hunt@melbournewater.com.au
Phone: (03) 8574 9705

Section 6 (c)

Position, address and telephone number of the persons who are responsible for carrying out the plan

Craig Dixon
General Manager, Infrastructure Operations, Melbourne Water
990 La Trobe St, Docklands, Victoria 3008
Email: Craig.Dixon@melbournewater.com.au
Phone: (03) 3860 00952

Craig Wills
Manager, Works Delivery, Melbourne Water
990 La Trobe St, Docklands, Victoria 3008
Email: Craig.Wills@melbournewater.com.au
Phone: 131 722

Section 6 (d)

Telephone number of the specified operator's control room so that persons in the room can be contacted in an emergency that requires action by the specified operator to mitigate the danger of bushfire

Winneke Control Room (Business hours)
Phone: (03) 9719 4666
Request: Winneke Duty Operator

Water Control Centre (After hours)
Phone: (03) 9325 2666
Request: Winneke Duty Operator

5.2 Policy and Objectives

Section 6 (e)

Bushfire mitigation policy of the specified operator to minimise the risk of fire ignition from its at-risk electric lines

Melbourne Water ensures assets are operated and maintained to:

- deliver safe, effective and reliable services;
- protect and improve the environment;
- meet agreed financial performance targets for the government and the wider community; and
- minimise the risk of fire ignition by Melbourne Water owned and operated high voltage power lines.

Melbourne Water's EMRG POL Emergency Management articulates the organisation's commitment to emergency management, including fire. It outlines Melbourne Water's emergency management objectives to:

- Prevent or reduce the risks of incidents occurring;
- Maintain welfare and confidence of our people, customers, stakeholders and the community;
- Minimise the impacts of a disruption;
- Ensure that critical stakeholders are kept informed; and
- Return to normal operations as quickly as possible.

In accordance with the Integrated Fire Management Planning (IFMP) process, Melbourne Water has developed bushfire risk management plans identifying assets at risk from bushfire and programs to mitigate that risk. These assets at-risk, including the 2.6 km of 11kV, have been logged in the Victorian Fire Risk Register (VFRR).

Melbourne Water's Sugarloaf Bushfire Risk Management Plan identifies actions to mitigate bushfire risk within the catchment area and to our at-risk assets. In determining risk and risk management the international standard for risk management, ISO 31000:2009 is used.

Melbourne Water has also developed AM PLA MW Electrical Line Clearance Management which outline our responsibilities for clearing vegetation to manage the fire risk from power lines on our estate and ensure our compliance with relevant legislation.

5.2.1 Local Plans and Procedures

At the Winneke Treatment Plant, the Winneke Team Bushfire Survival Plan and Winneke Water Treatment Plant Emergency Response Plan and Manifest also provide governance in the management of fire risk from power lines.

For the Bells Portal site see the EMRG PLA North East Civil Emergency Response Plan.

Section 6 (f)

Objectives of the plan to achieve the mitigation of fire danger arising from the specified operator's at-risk electric lines

The objectives of this plan, to mitigate risks to the community, the environment and Melbourne Water assets through fire ignitions from power lines, are to:

- Ensure vegetation is managed along high voltage power lines to minimise risk of ignition and allow access for maintenance and emergency works;
- Ensure electrical infrastructure is maintained to a high standard to minimise the risk of ignition or failure; and
- Ensure all works along power lines are completed by suitably qualified people.

5.3 Asset Description

Section 6 (g)

Description, map or plan of the land to which the bushfire mitigation plan applies, identifying the location of the specified operator's at-risk electric lines

The **at-risk power lines** owned and operated by Melbourne Water are located predominantly around the Sugarloaf area in Christmas Hills, about 35 km north-east of Melbourne (see Appendix A: Locality map of the Sugarloaf/Winneke area) and at Bells Portal (Thompsons Reservoir) about 150km east of Melbourne.

The location and details of power lines and poles are shown in Appendix B: At Risk Power Line Location Maps

Locations of high voltage electrical isolation control points are shown in Appendix F: High Voltage Isolation Control Points and the results of the 2020 Assessment are shown in Appendix G: Results of Last Inspection. The Vegetation Inspection Report is shown in Appendix I: Vegetation Inspection Report.

Electrical assets located within this area include:

5.3.1 Winneke Treatment Plant

- *Melbourne Water Main Substation 66kV*

  Substation maintained by Melbourne Water (66 kV incoming line is owned and operated by AusNet Services)
- *Yering Gorge (Pumping Station) Feeder No.1 and No. 2 consists of* 500m of 11kV overhead aerial bundled (insulated cable) cable from the substation to the Yering Gorge Pumping Station
- *WTP (Winneke Treatment Plant) Feeder No.1 and No.2 consists of* 2.1 km of 11kV aerial bundled cable (insulated cable) to Winneke Treatment Plant.

The Sugarloaf area covers the traditional lands of the Wurundjeri and Taungurong people from the Kulin Nation. Construction of Sugarloaf Reservoir and Winneke Treatment Plant began during the late 1970s and was completed in 1981. The Sugarloaf Reservoir catchment is surrounded largely by private property. Parks Victoria also has adjoining tenure around

Kinglake-Warrandyte Conservation Reserve and National Park and One Tree Hill Reserve to the north. Water from Sugarloaf Reservoir is treated at the Winneke Water Treatment Plant to World Health Organisation guidelines before entering Melbourne's water supply system. The power lines at Sugarloaf reservoir are situated within the Box Ironbark Forest EVC in the Highlands – Southern Fall Bioregion.

5.3.2 Bells Portal

The Bells Portal site is located within Baw Baw National Park next to Thompson Reservoir.

5.4 Management Strategy

Section 6 (h)

Preventative strategies and programs to be adopted by the specified operator to minimise the risk of the specified operator's at-risk electric lines starting fires

Melbourne Water applies an Asset Management approach to ensure efficient and effective management of our assets through full service lifecycle. Melbourne Water's strategies to mitigate bushfire risk are covered by two broad programs; the vegetation management program and asset condition monitoring and renewal program.

The Bush Fire Mitigation Plan (BFMP) is managed through appropriate contractor management processes as detailed below.

- Vegetation Management
- Condition Monitoring and Renewal Program
- REFCL Program

5.4.1 Vegetation Management

Vegetation is managed as per Melbourne Water's Electrical Line Clearance Management Plan. In summary, Melbourne Water engages a suitable qualified Vegetation Management Company (VMC) to complete inspections of all Melbourne Water responsible electricity lines to ensure compliance with the Code. The process to manage vegetation is as follows:

1. Works identified by the VMC is reported to Melbourne Water.
2. Melbourne Water's approved contractors complete the required work that has been identified in the inspection.
3. The VMC reports directly to the responsible Melbourne Water representative within the relevant delivery team within Melbourne Water's Service Delivery business group.
4. The VMC and contractors are subjected to Melbourne Water audits to ensure contractors are qualified to complete the works, are working to the required specifications and OH&S standards.

5.4.2 Condition Monitoring and Renewal Program

1. Melbourne Water's Asset Management Services team defines the scope of condition monitoring and frequency of inspection.
2. Work orders are generated by Melbourne Water's Asset Management Information System, Maximo, as per the defined inspection frequency.

3. The inspections are carried out by Melbourne Water's maintenance contractor, Programmed, and a condition report is attached to the work order (note: the most recent inspection report is in Appendix I: Vegetation Inspection Report of this document).
4. Corrective work orders are raised should any urgent issues be identified in the condition report. Opportunities for improvement or issues such as deterioration in asset condition are reviewed by Melbourne Water's Asset Management Services team as part of a condition rating review process.

Figure 1 shows the Melbourne Water organisation chart with respect to key accountabilities and responsibilities for the BFMP.

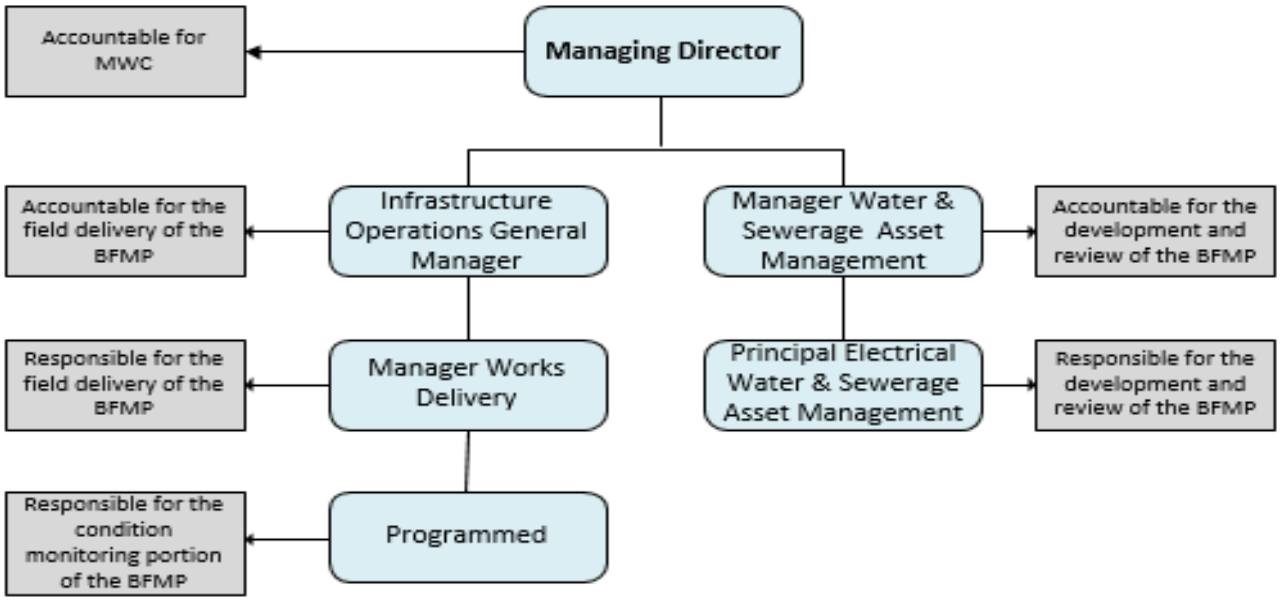


Figure 1: Melbourne Water accountabilities and responsibilities for the BFMP

Table 1 indicates the asset condition monitoring activities performed on HV power lines.

Table 1: Asset condition monitoring activities

Asset	Condition monitoring activity
Concrete poles	• Leaning of poles • Bowed poles • Concrete cracks/ rust • Soil erosion at the base
Stays	• Wire condition • Anchor condition • Insulator condition • Eye bolt cracks • Soil erosion
Insulators	• Cracks and chips

Asset	Condition monitoring activity
	• Loose hardware • Bolt rust
Cross arms	• Burning marks • Bowing or bending • Loose, rust or broken hardware
Conductors (insulated)	• Incorrect sags • Cracks in outer insulation
Connections	• Loose or broken connections • Conductor damage

Annual visual inspection of poles and lines is undertaken from the ground by Melbourne Water maintenance staff as per the preventative maintenance activities in Table 4. These inspections are carried out prior to Summer to identify any major, visible faults or potential risks, and compliance with relevant legislation.

Professional drone inspections of high voltage lines are undertaken on a 36 month basis to ensure assets are assessed from below and above by a qualified inspector. The results of the last inspection undertaken in early 2020 is summarised in Appendix G: Results of Last Inspection. The next concrete pole assessment is scheduled for late 2022.

The vegetation clearance program is a preventative strategy which involves the proactive inspection and clearance of vegetation along our power lines to minimise the risk of fire ignitions from power line-vegetation interaction. Vegetation inspection and maintenance along the power lines identified in this plan is carried out on an annual basis by qualified individuals. Inspections and maintenance activities should be carried out prior to each bushfire season. Vegetation clearance is carried out in accordance with the Electricity Safety (Electric Line Clearance) Regulations 2020. The latest Vegetation Inspection Report was carried out in 2021 and relevant extracts are shown in Appendix I: Vegetation Inspection Report.

Please refer to the Melbourne Water AM PLA MW Electrical Line Clearance Management for further details including auditing processes.

> Note: Melbourne Water ELCMP and other prevention programs are randomly audited by Energy Safe Victoria and work safe.

5.4.3 REFCL Program

The Essential Service Commission has amended the Electricity Distribution Code in response to changes to the Electricity Safety (Bushfire Mitigation) Regulations 2013 (Vic) under which the Victorian Government mandated the roll out of new bushfire mitigation technology across Victoria. The introduction of this technology forms part of the Victorian Government's Power Line Bushfire Safety Program.

AusNet Services has been installing Rapid Earth Fault Current Limiter (REFCL) technology at 22 of its zone substations in compliance with the Regulations.

The sites presented in Table 2 are within Energy Safe Victoria's Rapid Earth Fault Current Limiter (REFCL) program area. Note that only Sugarloaf Reservoir falls within the scope of this document.

Table 2: Melbourne Water facilities located in REFCL operational areas

Facility	MW Overhead HV Lines	Under Current REFCL Program	In HBRA	Comments
Sugarloaf Reservoir	Y	N	Y	The backup 22kV supply is now normally sourced from a non REFCL substation Chirnside Park. Was originally sourced from Lilydale. Ausnet will only switch back whilst REFCL not operating.
Upper Yarra mini hydro	N	Y	Y	A project has been completed to harden the assets at MW owned substation.
Cardinia Silvan Pump Station	N	Y	Y	A project has been completed to harden the assets at MW owned substation.
Olinda mini hydro	N	Y	Y	A project has been completed to harden the assets at MW owned substation.
Greenvale Reservoir	N	N	Y	
Maroondah Reservoir	N	N	Y	MW is a LV customer.
O'Shannassy Reservoir	N	Y	Y	MW is a LV customer.
Tarago Reservoir	N	N	Y	MW is a LV customer.
Yan Yean Reservoir	N	N	Y	MW is a LV customer.
Thomson Dam mini hydro	N	Y	Y	A project has been completed to harden the assets at MW owned substation.
Bells Portal Pump Station	N	Y	Y	A project has been completed to harden the assets at MW owned substation.
Epping Pump Station	N	N	N	HV equipment has been decommissioned. MW is a LV customer.
Preston Pump Station and mini hydro	N	N	N	

Facility	MW Overhead HV Lines	Under Current REFCL Program	In HBRA	Comments
Western Treatment Plant - Werribee	Y	N	N	This facility is not located in HBR area.
Eastern Treatment Plant - Bangholme	N	N	N	
Edithvale – Seaford Wetland	N	N	Y	MW is a LV customer.

The following sites that are impacted under the REFCL program are achieved with the following compliance given in Table 3 below.

Table 3: REFCL Readiness and Compliance

Facility	Compliance Achieved	REFCL Readiness
Cardinia/Silvan Pumping Station	***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents: • ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions ***Metering Compliance*** – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	Completed July 2020
Bells Portal Pumping Station	***Lowering of the Pole Mounted Transformers to improve maintenance access with considerations for:***	Completion October 2020

Facility	Compliance Achieved	REFCL Readiness
	• Fencing requirements, earthing, drainage, level of proposed switchyard location, cable re-routing, concrete work etc. ***Removing the need to perform manual HV switching in front of live switchboards.*** • Provide means of remote switching to de-energized switchboard • Provision of 3.3kV ***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents: • ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions ***Metering Compliance*** – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	
Silvan Mini Hydro	***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents: • ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions	Completed July 2020

Facility	Compliance Achieved	REFCL Readiness
	Metering Compliance – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	
Olinda Mini Hydro	***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents: • ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions ***Metering Compliance*** – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	Completed July 2020
Thomson Hydro	***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents:	Completed March 2021

Facility	Compliance Achieved	REFCL Readiness
	• ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions ***Metering Compliance*** – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	
Upper Yarra Hydro	***Protection settings reviewed and updated based on elevated voltages from the REFCL system*** • Protection settings shall be reviewed and updated in accordance with Melbourne Water standards and REF 30-10 – HV Customer Policy for REFCL Protected Networks (Load & Generator) ***Replacement of surge arresters*** with suitable ratings based on the following documents: • ESV Guidance for HV Customers – DOC/18/21295 • REF 10-04 – Equipment Building Block Functional Descriptions ***Metering Compliance*** – Voltage Transformers shall comply with the Voltage Factor for GFN: • Service & Installation Rules Document ***Testing/Replacement of Instrument Transformers*** *to be rated to withstand the 24.2kV phase-earth voltages (*with test certificates provided to prove compliance) • Instrument Transformers shall comply with the requirements of HV Customer Policy for REFCL Protected Networks (Load & Generator) – Document Number REF 30-10 ***Replacement of Insulators*** – to withstand 24.2kV phase to ground voltages.	Completed July 2020

In addition to these programs, Melbourne Water's Sugarloaf Bushfire Risk Management Plan identifies planned burning as part of the protection strategy for the assets identified in the Victorian Fire Risk Register, including the power lines in the Winneke / Sugarloaf area. Planned

burning reduces fuel loads and can decrease the risk of fires starting and the speed of fire spread. Fire operation plans are three-year work programs that are reviewed annually.

5.5 Procedures

Section 6 (i)

Plan for inspection that ensures that all of the specified operator's at-risk electric lines are inspected at regular intervals of no longer than 37 months

Melbourne Water assets and activities, including inspection and maintenance works, are managed in an automated internal asset management system (Maximo). Preventative maintenance activities have been scheduled for all at-risk power lines to ensure instruction to carry out these works is automatically generated and inspections are carried out at appropriate intervals (i.e. at 36 months).

Preventive maintenance programs have been scheduled for Melbourne Water managed at-risk power lines as outlined in Table 4. Vegetation line clearance maintenance programs are detailed in Table 2 of Electrical Line Clearance Management Plan and are not repeated here.

The most recent inspection of the Sugarloaf Power lines was in 2020 (Appendix G: Results of Last Inspection). This report details the lines as serviceable but with some repairs required. It also identified that ABC cables were loose/unravelled at some points. In response Melbourne Water has initiated two projects to remediate: H10922 - Yering Gorge PS and F10633 Winneke substation. Project H10922 completed repairs to Yering Gorge PS line and also completed some repairs to the treatment plant line between poles 1&2 in Sept 2021. Project F10633 will design repairs to the rest of the treatment plant line and complete construction work early 2023. The planned maintenance inspection (HAN27039) due 2022 will provide an updated condition assessment independent of project F10633 completion.

This plan has been specifically designed for the at-risk electric lines in the Sugarloaf-Winneke area and Thompson Dam, Bells Portal area. In addition to the plan, regulatory requirements for Sugarloaf, and Bells Portal mitigation, Table 4 also includes all other overhead lines owned by Melbourne Water. The intent of this inclusion is to provide internal clarity on overall risk management.

Table 4: Preventative maintenance programs scheduled in Maximo

Preventive Maintenance No.	Description	Performer	Frequency (months)
HAN27039	Overhead Power Line Inspection - Sugarloaf Reservoir - External Consultant	External Specialist Contractor	12 (temporary change to 12 months. Will revert back to 36 months once some identified non urgent remedials are

Preventive Maintenance No.	Description	Performer	Frequency (months)
			completed. Project F10633 is addressing)
HAN27040	Overhead Power Cable Inspection - Sugarloaf Reservoir	PGM	12
PM21902 (sequenced) – JP106308	Overhead Power Cable Inspection – Bells Portal (may be in omitted in years coinciding with PM21903)	PGM	12
PM21902 (sequenced) – JP106310	Overhead Power Line Inspection – Bells Portal - External Consultant	External Specialist Contractor	36
PM11233 (sequenced) – JP002549	Overhead Power Cable Inspection Upper Yarra	PGM	36
PM11233 (sequenced) – JP107177	Overhead Power Cable Inspection Upper Yarra 12 monthly inspection as per service provider recommendation	PGM	12
PM13208	Tarago Reservoir Dam Overhead Power Line Inspection	PGM	12
PM13232	Silvan LV Overhead Power lines Inspection	PGM	36
PM13284	Cardinia Res Duffy's Overhead Power line Inspection Cardinia Overhead Power line Inspection	PGM	36
HAN21614	Western Treatment Plant Overhead Power Line Inspection	PGM	36
PM23777	Devils Bend	PGM	36
PM23778	Montrose reservoir	PGM	36
PM13920	Pipe track private line - Gordon St, Croydon	PGM	36
PM14031	Pipe track private line Jarvis Av Croydon	PGM	36

PRM: Programmed – The company engaged by Melbourne Water to provide Internal Services.

Section 6 (j)

Details of the processes and procedures for ensuring that each person who is assigned to carry out the inspections referred to in paragraph (i) has satisfactorily completed a training course approved by Energy Safe Victoria and is competent to carry out such inspections

Melbourne Water engages suitably qualified contractor(s) to undertake maintenance inspections of our HV overhead power lines in the Sugarloaf/Winneke and Bells Portal areas. The qualifications of internal and external contractors are reviewed and verified before engagement to ensure they meet the minimum level established by the Victorian Electricity Supply Industry (VESI) and, therefore, meet the Australian Qualification Framework (AQF) requirements or equivalent. This ensures that people undertaking the inspections have the relevant qualifications and licences.

It is a Melbourne Water contractual requirement that all employees and contractors engaged carry out:

1. Cyclic inspection of overhead power line assets including poles must have minimum Certificate II in ESI - Asset Inspection. Where this qualification has been attained in a State of Australia other than Victoria, induction shall be conducted by a person holding a Certificate IV in Training and Assessment at a minimum, and include information on Victorians Acts, Regulations, Codes of Practice, Safety Rules, Industry Guidelines and Asset Identification. Melbourne Water and its contractors maintain the records of relevant authorisation and review to ensure re-authorisation shall occur at intervals not exceeding a three year period.
2. Vegetation Clearance inspection - See the Electrical Line Clearance Management Plan for more details on vegetation clearance inspection.

Section 6 (k)

Details of the processes and procedures for ensuring that persons (other than persons referred to in paragraph (j)) who carry out or will carry out functions under the plan are competent to do so

Melbourne Water engages suitably qualified contractor(s) to undertake maintenance activities associated with our HV overhead power lines in the Sugarloaf/Winneke and Bells Portal areas. The qualifications of internal and external contractors are reviewed and verified before engagement to ensure they meet the minimum level established by the Victorian Electricity Supply Industry (VESI) and, therefore, the Australian Qualification Framework (AQF) requirements or equivalent.

Table 5 indicates the persons and their minimum qualification requirements to perform the tasks relating to the power lines specified in BFMP.

Table 5: Qualifications required to undertake BFMP tasks (other than inspections)

Task	Performed by	Minimum qualifications required
Vegetation control clearance removal works	Vegetation line clearance external contractors	Certificate II in ESI Power line Vegetation Control – UET20311

Task	Performed by	Minimum qualifications required
Overhead power line visual inspection from ground level	Operators	A grade electricians and authorised electrical operators
Overhead power works	Linesman, fitter or jointers employed by the external consultant	Certificate III in ESI - Power Systems - Distribution Overhead 1 – UET30621 or Certificate III in ESI - Power Systems - Distribution Cable Jointing 1 – UET30821
	Registered Electrical Contractor	Holder of Registered Electrical Contractors Registration

Companies undertaking vegetation management work and/or rectification work have the responsibility to ensure that their employees are suitably trained, assessed as competent, and authorised for the work that they are undertaking. Melbourne Water maintains the records of relevant authorisation and permits are only issued to work on assets where proof of up to date training can be provided. Melbourne Water's permit system automatically checks the training records prior to issuing a permit to ensure re-authorisation shall occur at intervals not exceeding a three year period.

Section 6 (l)

Operation and maintenance plans for the specified operator's at-risk electric lines—

(i) in the event of a fire; and

(ii) during a total fire ban day; and

(iii) during a fire danger period

5.5.1 During a Fire Event

In the event of a fire in the Sugarloaf catchment, Winneke Treatment Plant or surrounding area, Melbourne Water staff will immediately contact emergency services. If a fire is confirmed and has the potential to impact High Voltage lines, suitably trained technicians will conduct appropriate High Voltage switching works, to safely isolate the supply, prior to combating the fire.

Bells Portal is remote from main sealed roads. Only the last 64m of the supply line is owned and operated by Melbourne Water. As such any required isolations would be undertaken by the power utility Ausnet to the main supplying line.

Melbourne Water is not a statutory firefighting authority. However, we employ more than 100 trained firefighters during the fire danger period to fight fires in conjunction with the Department of Environment, Land, Water and Planning (DELWP), Parks Victoria, and the Country Fire Authority (CFA). Rostered Melbourne Water firefighters may also attend a fire in the Sugarloaf/Winneke area if required.

Melbourne Water's response to a fire event would be carried out in accordance with our EMRG POL Emergency Management.

5.5.2 Total Fire Ban Days

The risk of certain work activities starting a fire or staff being caught in a dangerous environment as a result of a fire is extremely high on a Total Fire Ban (TFB) day. To help manage this risk, Melbourne Water has guidelines, procedures and instructions that must be adhered to on TFB days, including declared Severe, Extreme or Code Red conditions under the National Fire Danger Rating system. These are listed below:

- WATER WINK123 Winneke Team Bushfire Survival Plan
- Winneke Water Treatment Plant Emergency Response Plan and Manifest
- AM PLA Sugarloaf Bushfire Risk Management
- H&S GUI Working During Fire Season
- H&S GUI Working on Fire Danger Days
- H&S GUI Severe Extreme or Code Red Fire Day Planning

On fire danger days declared as Severe, Extreme or Code Red under the National Fire Danger Rating system Melbourne Water will defer High Voltage Switching Operations where practical, or restrict operations to essential activities to maintain critical services. Commissioning of lines will not be undertaken. In the event a plant has experienced a High Voltage feeder fault, a visual inspection of the relevant feeders is conducted to ensure the fault has not initiated a fire.

The risk of Melbourne Water's HV lines starting a fire Sugarloaf and Winneke has been reduced through their design. The lines are insulated (ABC) and each of the HV lines are protected by vacuum circuit breakers, which are set to one shot lock out. The following elements of the protection relay are enabled:

- Phase overcurrent protection
- Earth fault protection

The protection settings are outlined in Table 6.

Table 6: Protection Settings

	I	**Delay type**	**tI_e**
Phase Over Current	$>1.5I_n$	DMT	0.6sec
Earth/Ground Fault	$> 0.075I_{en}$	DMT	0.9sec

In addition, back up protection is provided by the transformer sensitive earth fault set at 1.2 sec.

Bells Portal Melbourne Water owned line section are bare conductors protected by an SF6 Circuit breaker.

Melbourne Water applies annually for Hot Work permits from the CFA under S40 CFA Act (1958) to ensure that emergency works can be undertaken on a TFB day. Emergency works are only to be carried to maintain Melbourne Water's assets critical to the health and safety of the general public. Emergency works can only be undertaken where appropriate control measures are in place.

5.5.3 Fire Danger Period

Melbourne Water's inspection and maintenance programs for asset condition and vegetation clearance are completed prior to the beginning of a fire danger period, to ensure electrical assets are clear and operating during this period. Therefore maintenance operations around electrical assets during the fire danger period would be restricted to fault investigation or emergency works, lowering the risk of potential fire ignitions during this high risk period.

The design features of the HV lines (discussed above) also help to mitigate bushfire risk during the fire danger period.

5.6 Performance Monitoring and Auditing

Section 6 (m)

Investigations, analysis and methodology to be adopted by the specified operator for the mitigation of the risk of fire ignition from its at-risk electric lines

Melbourne Water applies a condition based maintenance approach to ensure mitigation of fire ignition risk from our at-risk electric lines (see Appendix H: Condition Based Monitoring Management Approach). Periodic inspections and works are undertaken to ensure the possibility of causing an ignition source from HV overhead lines is minimised by:

- Completing annual inspections and completing actions identified during inspections to maintain appropriate vegetation clearance; and
- Completing inspections every 3 years and repairing any identified defects during inspections to ensure electrical assets are in good working order and are operating in such a way as to mitigate the risk of fire ignition.

Any safety issues or incidents relating to the electrical assets are investigated using Melbourne Water's incident management system, IRIS. The incidents recoded in IRIS are reviewed by a team of senior managers and assigned to the most appropriate person to action within a given time frame. The status of actions not completed within the specified time period is escalated to the next level up in the organisational hierarchy through internal reporting processes. The peak point of escalation is the Managing Director.

The assignee of the IRIS action will typically be directed to investigate and determine the root cause of the incident. Tasks undertaken to achieve this objective include:

- Site visits and information collection including photos and samples of materials;
- Brain storming sessions with relevant people of various expertise if required; and
- Engagement of technically qualified persons (most instances a consultancy firm) to perform detailed analysis and recommend corrective actions to prevent recurrence of similar incident.

The risks associated with electrical assets (including bushfire risk) are considered during condition rating reviews. This process involves determining the consequence and likelihood of potential asset failure scenarios (using Melbourne Water's Risk Management Procedure) and evaluating the effectiveness of mitigation strategies currently in place. Risk ratings are used to determine and prioritise improved mitigation actions to reduce all risks to 'as low as practical'.

Melbourne Water annually reviews the effectiveness of the bushfire mitigation plan. Furthermore, Melbourne Water submits the Bushfire Mitigation Plan and Electric line Clearance

Management Plan to ESV for acceptance annually. Recommendations and observations by ESV are actioned in accordance with the assigned priority. Progress of each action is monitored by the Melbourne Water Operations Team.

Each year Melbourne Water engages contractors specialised in inspection and vegetation management to inspect and clear vegetation in October. These inspections also identify any obvious defects in assets as well as any abnormal vegetation growth. These defects are recorded in Maximo and corrective work orders are generated. The inspection covers 100% of the Melbourne Water HBRA.

In 2013 there was a fire start at Sugarloaf Reservoir in 2013, when an 11kV HV ABC conductor shorted on catenary wire and started a ground fire. The unscreened HV ABC were replaced with metallic screened HV ABC to reduce the likelihood of a similar fire start occurrence.

Section 6 (n)

Details of the processes and procedures by which the specified operator will—

(i) monitor the implementation of the bushfire mitigation plan; and

(ii) audit the implementation of the plan; and

(iii) identify any deficiencies in the plan or the plan's implementation; and

(iv) change the plan and the plan's implementation to rectify any deficiencies identified under subparagraph (iii); and

(v) monitor the effectiveness of inspections carried out under the plan; and

(vi) audit the effectiveness of inspections carried out under the plan

5.6.1 Monitoring and Auditing

Melbourne Water uses its asset management information system, Maximo, to assist with the monitoring and auditing of its asset management program.

Melbourne Water uses Risk Based Maintenance (RBM) and Reliability Centred Maintenance (RCM) methodologies to determine the optimum asset maintenance policies. A range of asset parameters including asset type, criticality, failure modes, operating environment, asset age, breakdown history, inspection reports and regulatory requirements are used in this process. All inspections required under this plan have been included in this system as Programed Maintenance activities (see Table 4) which will automatically trigger work orders to complete inspections 3 months before the end of each inspection cycle, to ensure inspections and works are undertaken in a timely manner. The outcomes of inspection reports are utilised to assign works (see Appendix H: Condition Based Monitoring Management Approach). The automatically generated workflow system ensures scheduled work orders are carried out on time. The Maximo system is configured to generate reports on any work that is delayed and escalate on the management hierarchy. Power line asset information including inspection reports, testing results, fault reports and completed works are retained in electronic form within Maximo.

In accordance with Melbourne Water's IT Security Policy, access to electronic information is strictly controlled via passwords and user names. Each user is provided with the levels of access to specified parts of the system appropriate to that user.

Melbourne Water's vegetation clearing and pruning program is managed by Electrical Line Clearance Management Plan (ELCMP).

5.6.2 Plan Implementation and Effectiveness

Melbourne Water's Asset Management Services team ensure optimal management and performance of our assets. The implementation of this plan by Melbourne Water's Operations team will be audited and reviewed annually as part of the review of both the Bushfire Mitigation and Electric Line Clearance Management Plans. Any hazards, audit actions and all events such as fires are entered into Melbourne Water's incident management system, IRIS, as per H&S PRO Event Notification Investigation and Analysis. The Asset Management Services team will audit Maximo and IRIS data to ensure the works are being effectivity implemented by the Operations team and identify any deficiencies and/or improvements as required.

5.6.3 Plan Improvements

As part of the annual review of the Bushfire Mitigation and Electric Line Clearance plans by Melbourne Water's Asset Management Services team, any deficiencies are addressed and improvements are incorporated. These documents are stored in Melbourne Water's Integrated Management System (IMS) Controlled Document Library, and a system generated automatic process ensures that the document is reviewed and approved in a timely manner. This system also captures all changes and previous versions of these documents to allow an audit of changes if required.

Drafting documents used in the preparation of the next year's plan are located within the folder Electric Line Bushfire Mitigation Plan Drafting Folder. These documents have DRAFT in the title and are watermarked *DRAFT*.

Following internal approval of the plan, this document will be placed in Melbourne Water's Integrated Management System (IMS) Controlled Document Library, where the most current version can be made readily available to all Melbourne Water staff. The 'add version' process is used to maintain the document ID number. This also maintains the preventative maintenance links in Maximo.

Melbourne Water may also review this plan as necessary to account for changes in context or risk. This may be triggered by circumstances including but not limited to:

- Changes such as organisational responsibilities or legislation;
- Directions from ESV or fire management authorities;
- Improvements in risk analysis and assessment techniques;
- Changes to the bushfire risk in the area;
- Response to an event or incident (e.g. HV feeder fault, bushfire);
- Changes to on site HV infrastructure.

Once updated, the Bushfire Mitigation Plan is submitted to Energy Safe Victoria (ESV) for review before 1st July. Any recommendations for improvement or concerns must be addressed before ESV approves the plan.

5.6.4 Monitor and Audit Effectiveness of Inspections

Melbourne Water ensures inspections and works carried out by qualified third parties are effective through attendance at the time of works by a Melbourne Water electrical technician or Project Officer or verification during subsequent inspections. For example, a Melbourne Water

project officer supervises vegetation clearance works and Melbourne Water staff undertakes annual inspections along the lines to ensure clearance and operational effectiveness is maintained.

The effectiveness of annual and 3 yearly inspections and works will be monitored by a review of the inspection reports by the Asset Management Services team, as part of the annual review of Melbourne Water's Bushfire Mitigation Plan.

Section 6 (o)

Policy of the specified operator in relation to the assistance to be provided to fire control authorities in the investigation of fires near the specified operator's at-risk electric lines

Melbourne Water has a long history of cooperation with the Country Fire Authority (CFA), Melbourne Fire Brigade (MFB), DELWP and Parks Victoria. Bushfire planning, mitigation and fighting on our land and in the water supply catchments is undertaken in conjunction with these agencies. Melbourne Water will assist Fire Control Authorities in their investigation of fires near our at-risk electric lines by:

- Assisting with safe access to assets;
- Making assets safe before commencement of investigations including, where appropriate, isolating power;
- Sharing appropriate information regarding an incident and related inspection or maintenance reports; and
- Inviting external authorities to attend incident investigations as required.

5.7 Energy Safe Victoria Exemptions

Section 13(1) Energy Safe Victoria may, in writing, exempt a specified operator or major electricity company from any of the requirements of these regulations

Melbourne Water, as a specified operator, does not have any exemptions.

Section 13(2) An exemption under sub regulation (1) may specify conditions to which the exemption is subject

Melbourne Water, as a specified operator, does not have any exemptions.

6. References

Document title
AM PLA MW Electrical Line Clearance Management
AM PLA Sugarloaf Bushfire Risk Management
EMRG PLA North East Civil Emergency Response
EMRG POL Emergency Management
H&S GUI Severe Extreme or Code Red Fire Day Planning
H&S GUI Working During Fire Season
H&S GUI Working on Fire Danger Days
H&S PRO Event Notification Investigation and Analysis
RISK PRO Risk Management
WATER WINK123 Winneke Team Bushfire Survival Plan
Winneke Water Treatment Plant Emergency Response Plan and Manifest

7. Appendices

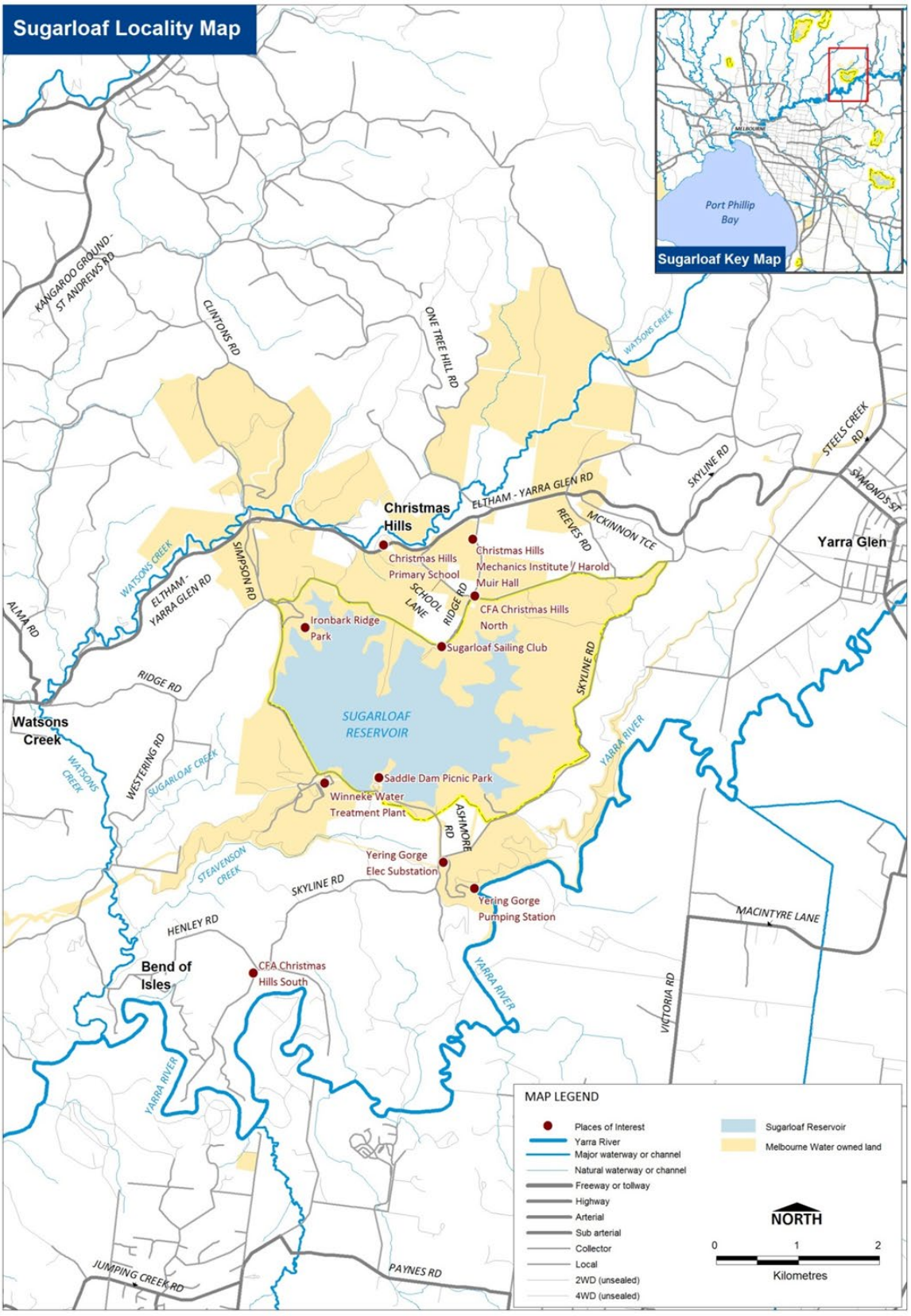
Appendices
Appendix A: Locality map of the Sugarloaf/Winneke area
Appendix B: At Risk Power Line Location Maps
Appendix C: Winneke Treatment & Plant Line
Appendix D: Yering Gorge (Pumping Station) Line
Appendix E: Bells Portal Line
Appendix F: High Voltage Isolation Control Points
Appendix G: Results of Last Inspection
Appendix H: Condition Based Monitoring Management Approach
Appendix I: Vegetation Inspection Report

8. Document History

Date	Reviewed/ Actioned By	Version	Action
June 2022	WASAM Principal - Electrical	21	Updated for 22/23

Date	Reviewed/ Actioned By	Version	Action
October 2021	Water & Sewerage Asset Management Principal - Electrical	20	Updated for 21/22 after ESV comment
June 2021	Water & Sewerage Asset Management Principal - Electrical	19	Updated for 21/22

Appendix A: Locality map of the Sugarloaf/Winneke area

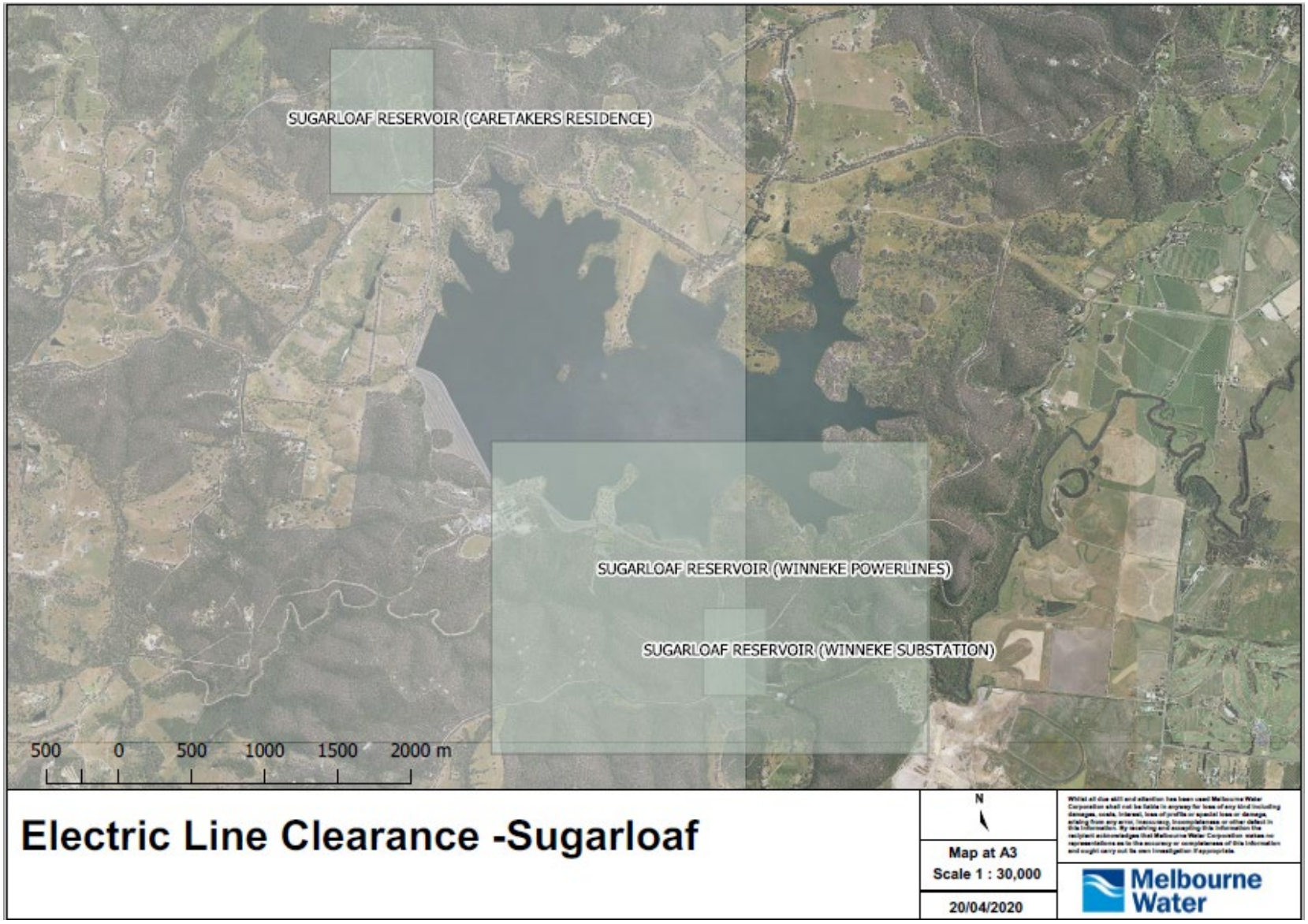


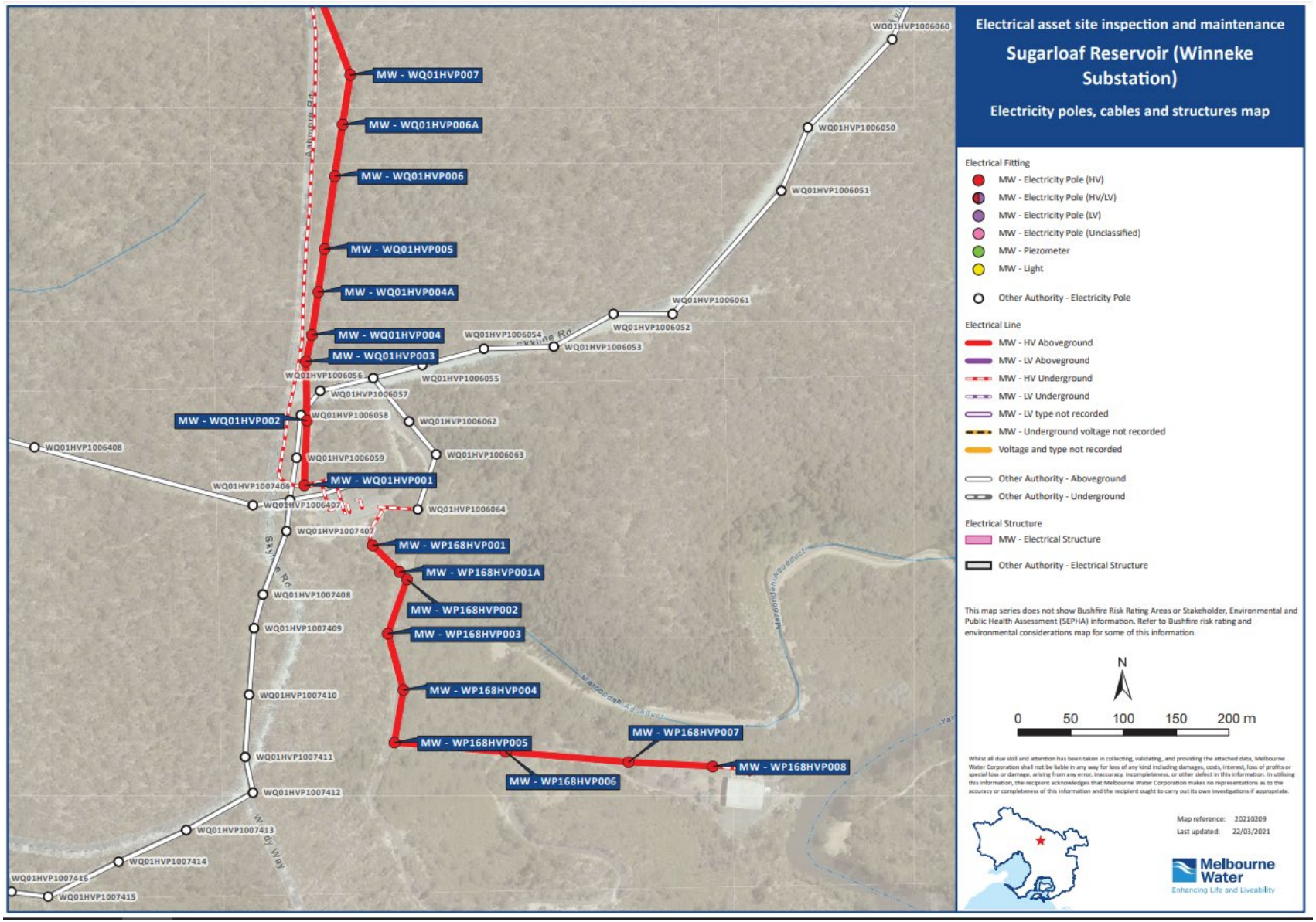
Appendix B: At Risk Power Line Location Maps

Power line location maps are stored in Inflo at the following locations. The images have been reproduced on the following pages so that they can be observed directly from this plan.

Inflo Links:

- Sugarloaf Reservoir Overview OH line
- Sugarloaf Electricity_Poles_Cables_Labelled_Map.pdf
- Bells Portal Poles_Cables_Labelled_Map.pdf


SUGARLOAF RESERVOIR (CARETAKERS RESIDENCE)
SUGARLOAF RESERVOIR (WINNEKE POWERLINES)
SUGARLOAF RESERVOIR (WINNEKE SUBSTATION)
500 0 500 1000 1500 2000 m
Electric Line Clearance -Sugarloaf
N
Map at A3
Scale 1 : 30,000
20/04/2020
Melbourne Water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MW - WQ01HVP006A
MW - WQ01HVP006
MW - WQ01HVP005
MW - WQ01HVP004A
MW - WQ01HVP004
MW - WQ01HVP003
MW - WQ01HVP002
MW - WQ01HVP001
MW - WP168HVP001
MW - WP168HVP001A
MW - WP168HVP002
MW - WP168HVP003
MW - WP168HVP004
MW - WP168HVP005
MW - WP168HVP006
MW - WP168HVP007
MW - WP168HVP008
WQ01HVP1006060
WQ01HVP1006050
WQ01HVP1006051
WQ01HVP1006061
WQ01HVP1006052
WQ01HVP1006053
WQ01HVP1006054
WQ01HVP1006055
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WQ01HVP1006057
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WQ01HVP1006059
WQ01HVP1006064
WQ01HVP1006408
WQ01HVP1007406
WQ01HVP1006407
WQ01HVP1007407
WQ01HVP1007408
WQ01HVP1007409
WQ01HVP1007410
WQ01HVP1007411
WQ01HVP1007412
WQ01HVP1007413
WQ01HVP1007414
WQ01HVP1007416
WQ01HVP1007415
Electrical asset site inspection and maintenance
Sugarloaf Reservoir (Winneke Substation)
Electricity poles, cables and structures map
Electrical Fitting
MW - Electricity Pole (HV)
MW - Electricity Pole (HV/LV)
MW - Electricity Pole (LV)
MW - Electricity Pole (Unclassified)
MW - Piezometer
MW - Light
Other Authority - Electricity Pole
Electrical Line
MW - HV Aboveground
MW - LV Aboveground
MW - HV Underground
MW - LV Underground
MW - LV type not recorded
MW - Underground voltage not recorded
Voltage and type not recorded
Other Authority - Aboveground
Other Authority - Underground
Electrical Structure
MW - Electrical Structure
Other Authority - Electrical Structure
This map series does not show Bushfire Risk Rating Areas or Stakeholder, Environmental and Public Health Assessment (SEPHA) information. Refer to Bushfire risk rating and environmental considerations map for some of this information.
N
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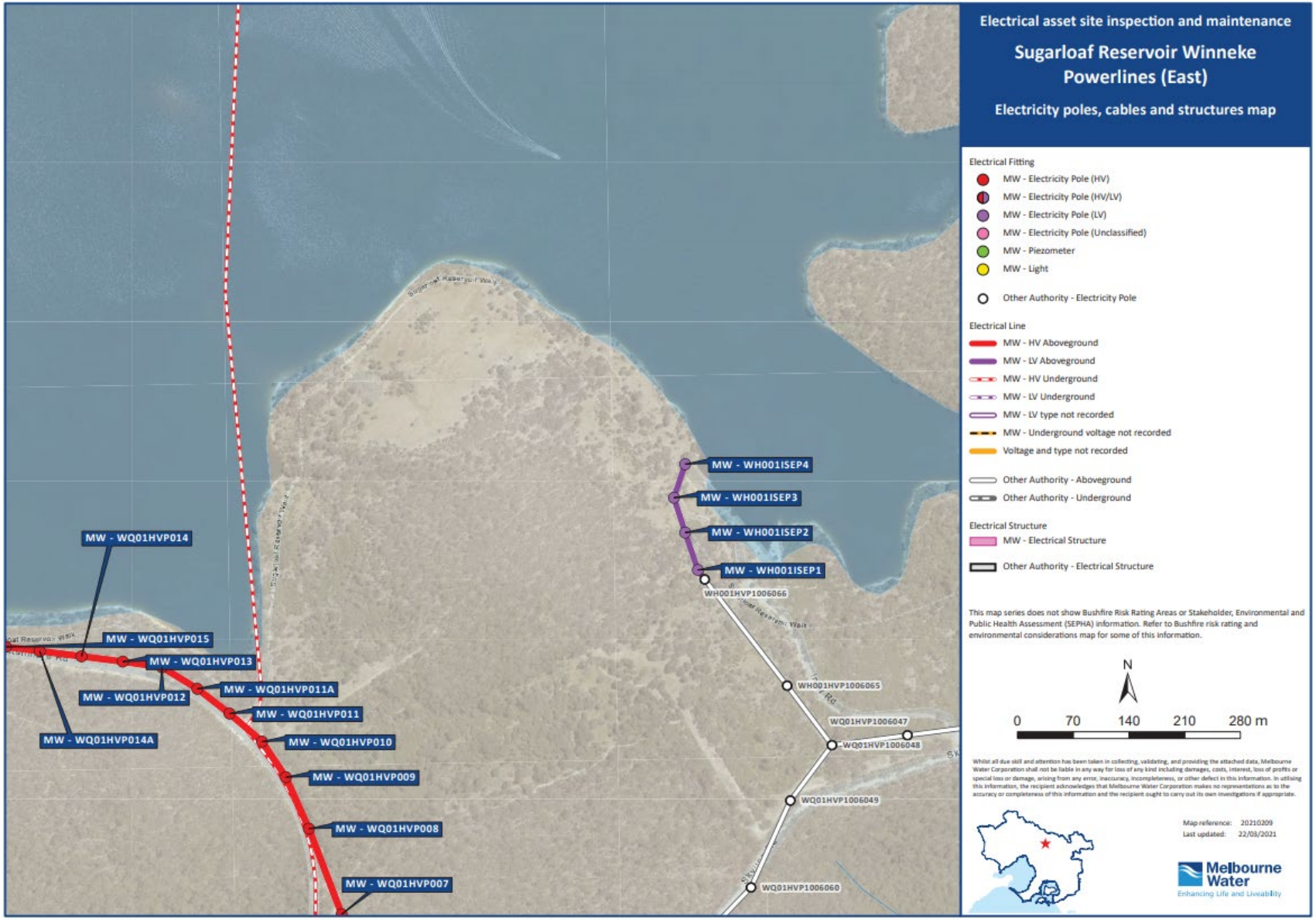
Map reference: 20210209
Last updated: 22/03/2021
Melbourne Water
Enhancing Life and Liveability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MW - WQ01HVP015
MW - WQ01HVP013
MW - WQ01HVP012
MW - WQ01HVP011A
MW - WQ01HVP011
MW - WQ01HVP014A
MW - WQ01HVP010
MW - WQ01HVP009
MW - WQ01HVP008
MW - WQ01HVP007
MW - WH001ISEP4
MW - WH001ISEP3
MW - WH001ISEP2
MW - WH001ISEP1
WH001HVP1006066
WH001HVP1006065
WQ01HVP1006047
WQ01HVP1006048
WQ01HVP1006049
WQ01HVP1006060
Electrical asset site inspection and maintenance
Sugarloaf Reservoir Winneke Powerlines (East)
Electricity poles, cables and structures map
Electrical Fitting
MW - Electricity Pole (HV)
MW - Electricity Pole (HV/LV)
MW - Electricity Pole (LV)
MW - Electricity Pole (Unclassified)
MW - Piezometer
MW - Light
Other Authority - Electricity Pole
Electrical Line
MW - HV Aboveground
MW - LV Aboveground
MW - HV Underground
MW - LV Underground
MW - LV type not recorded
MW - Underground voltage not recorded
Voltage and type not recorded
Other Authority - Aboveground
Other Authority - Underground
Electrical Structure
MW - Electrical Structure
Other Authority - Electrical Structure
This map series does not show Bushfire Risk Rating Areas or Stakeholder, Environmental and Public Health Assessment (SEPHA) information. Refer to Bushfire risk rating and environmental considerations map for some of this information.
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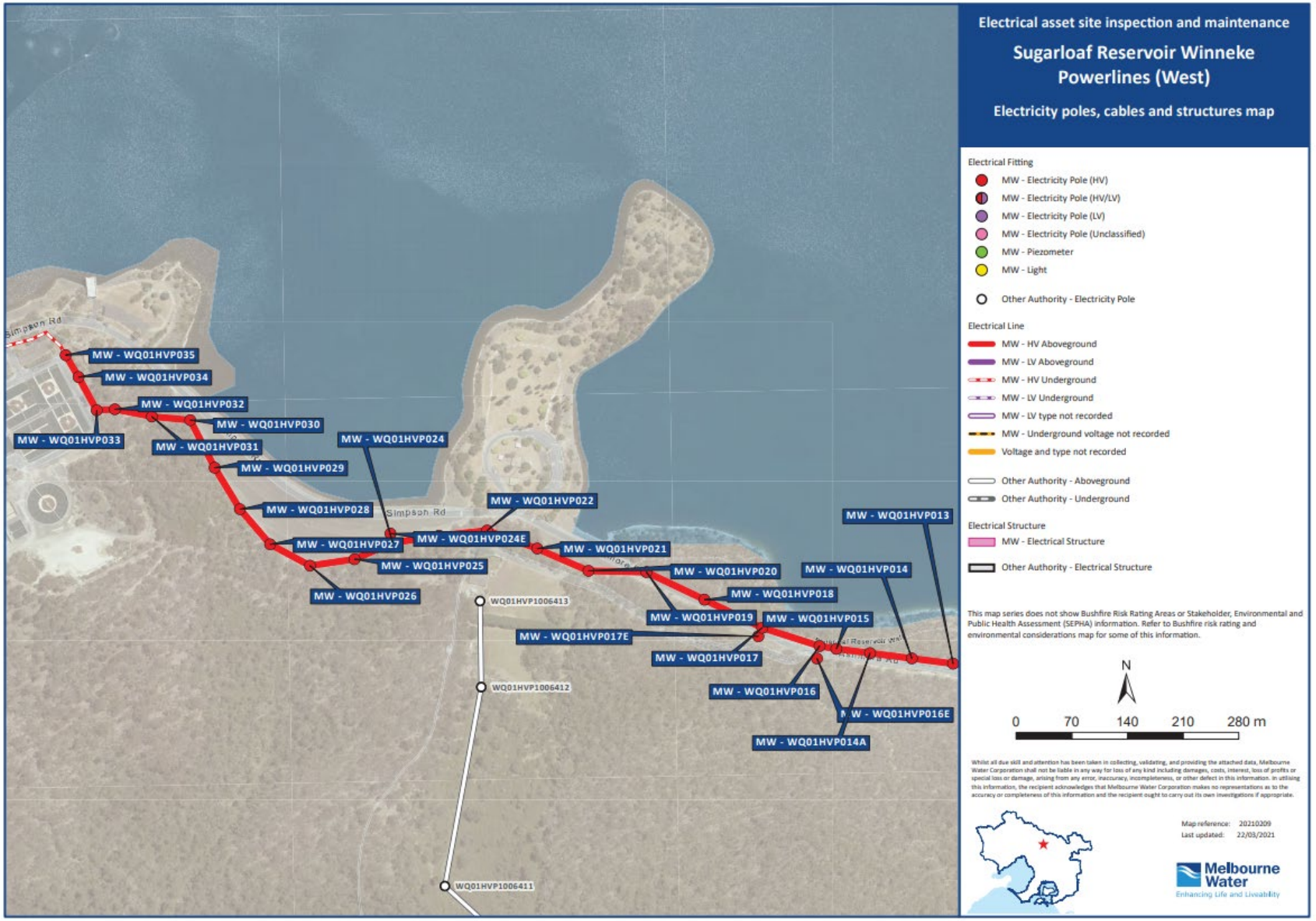
Map reference: 20210209
Last updated: 22/03/2021
Melbourne Water
Enhancing Life and Liveability


Electrical asset site inspection and maintenance
Sugarloaf Reservoir Winneke Powerlines (West)
Electricity poles, cables and structures map
Electrical Fitting
MW - Electricity Pole (HV)
MW - Electricity Pole (HV/LV)
MW - Electricity Pole (LV)
MW - Electricity Pole (Unclassified)
MW - Piezometer
MW - Light
Other Authority - Electricity Pole
Electrical Line
MW - HV Aboveground
MW - LV Aboveground
MW - HV Underground
MW - LV Underground
MW - LV type not recorded
MW - Underground voltage not recorded
Voltage and type not recorded
Other Authority - Aboveground
Other Authority - Underground
Electrical Structure
MW - Electrical Structure
Other Authority - Electrical Structure
This map series does not show Bushfire Risk Rating Areas or Stakeholder, Environmental and Public Health Assessment (SEPHA) information. Refer to Bushfire risk rating and environmental considerations map for some of this information.
N
0 70 140 210 280 m
Map reference: 20210209
Last updated: 22/03/2021
Melbourne Water
Enhancing Life and Liveability
MW - WQ01HVP035
MW - WQ01HVP034
MW - WQ01HVP032
MW - WQ01HVP030
MW - WQ01HVP033
MW - WQ01HVP031
MW - WQ01HVP029
MW - WQ01HVP024
MW - WQ01HVP028
MW - WQ01HVP022
MW - WQ01HVP027
MW - WQ01HVP024E
MW - WQ01HVP021
MW - WQ01HVP025
MW - WQ01HVP020
MW - WQ01HVP013
MW - WQ01HVP014
MW - WQ01HVP026
MW - WQ01HVP018
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MW - WQ01HVP019
MW - WQ01HVP015
MW - WQ01HVP017E
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MW - WQ01HVP016E
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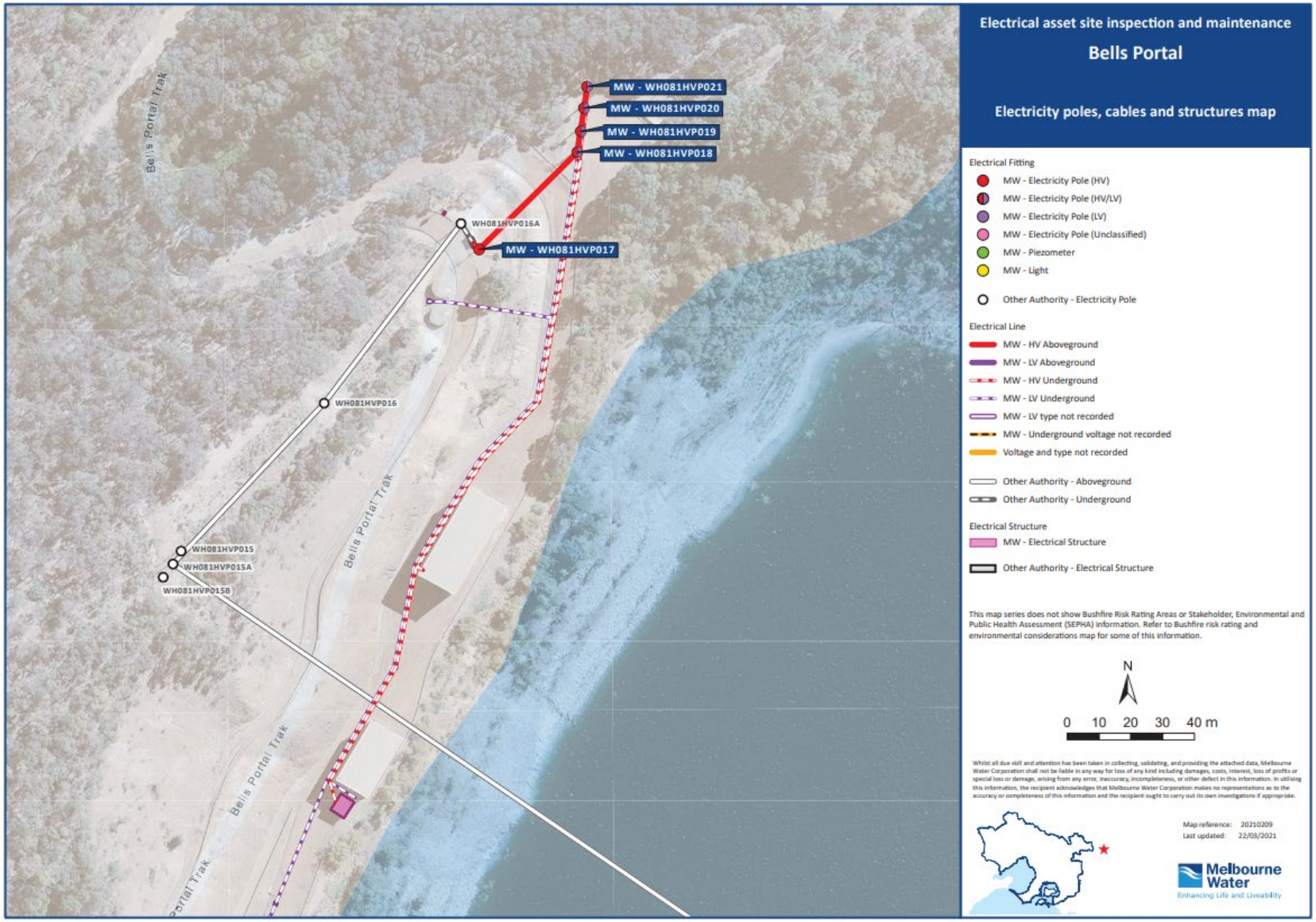
WQ01HVP1006411


Electrical asset site inspection and maintenance
Bells Portal
Electricity poles, cables and structures map
MW - WH081HVP021
MW - WH081HVP020
MW - WH081HVP019
MW - WH081HVP018
WH081HVP016A
MW - WH081HVP017
WH081HVP016
WH081HVP015
WH081HVP015A
WH081HVP015B
Bells Portal Trak
Electrical Fitting
MW - Electricity Pole (HV)
MW - Electricity Pole (HV/LV)
MW - Electricity Pole (LV)
MW - Electricity Pole (Unclassified)
MW - Piezometer
MW - Light
Other Authority - Electricity Pole
Electrical Line
MW - HV Aboveground
MW - LV Aboveground
MW - HV Underground
MW - LV Underground
MW - LV type not recorded
MW - Underground voltage not recorded
Voltage and type not recorded
Other Authority - Aboveground
Other Authority - Underground
Electrical Structure
MW - Electrical Structure
Other Authority - Electrical Structure
This map series does not show Bushfire Risk Rating Areas or Stakeholder, Environmental and Public Health Assessment (SEPHA) information. Refer to Bushfire risk rating and environmental considerations map for some of this information.
N
0 10 20 30 40 m
Map reference: 20210209
Last updated: 22/03/2021
Melbourne Water
Enhancing Life and Liveability

Appendix C: Winneke Treatment & Plant Line

Feeder 1 & 2 sub & plant spans Winneke.xlsx
https://inflo/inflo/cs.exe/link/54162236

Appendix D: Yering Gorge (Pumping Station) Line

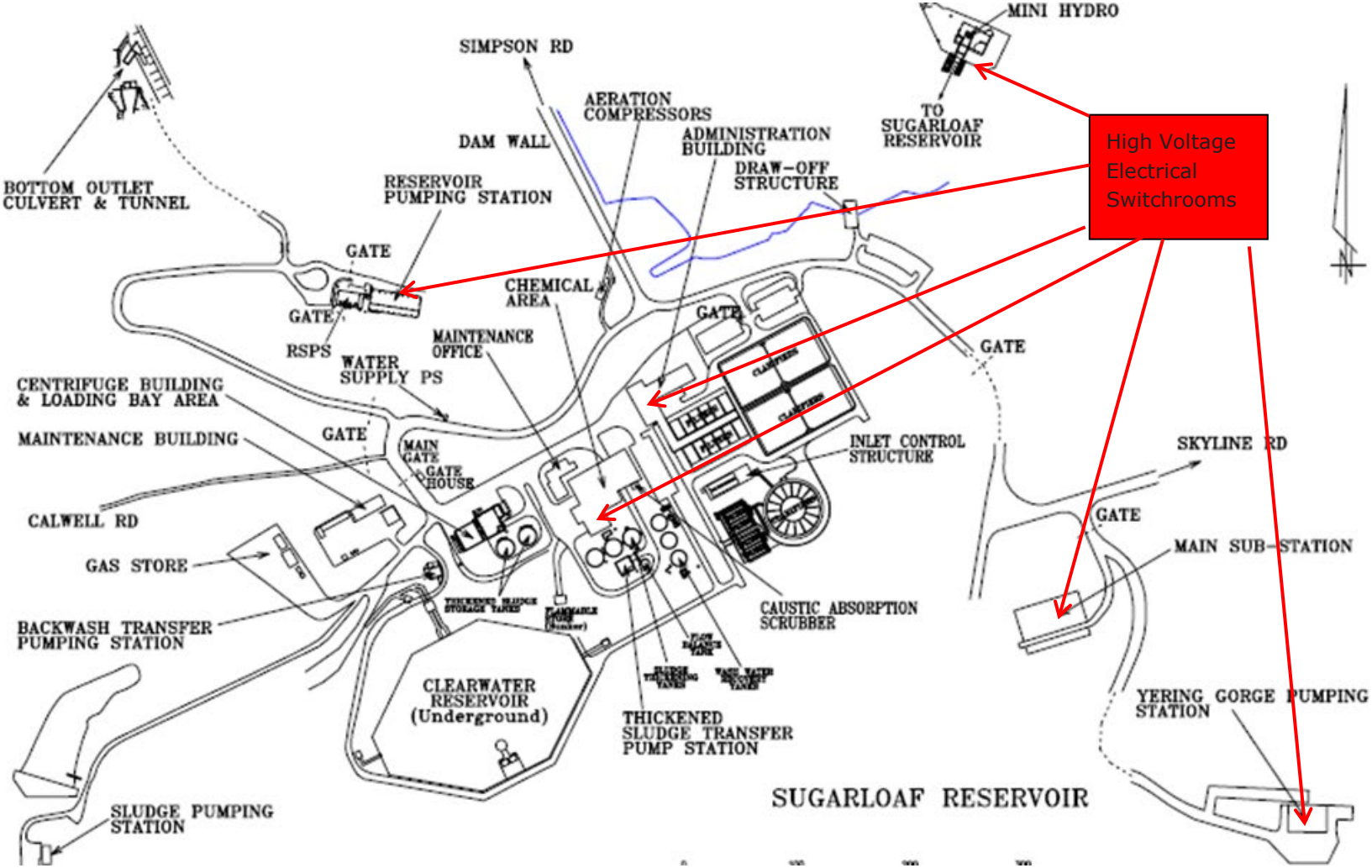
See Appendix C.

Appendix E: Bells Portal Line

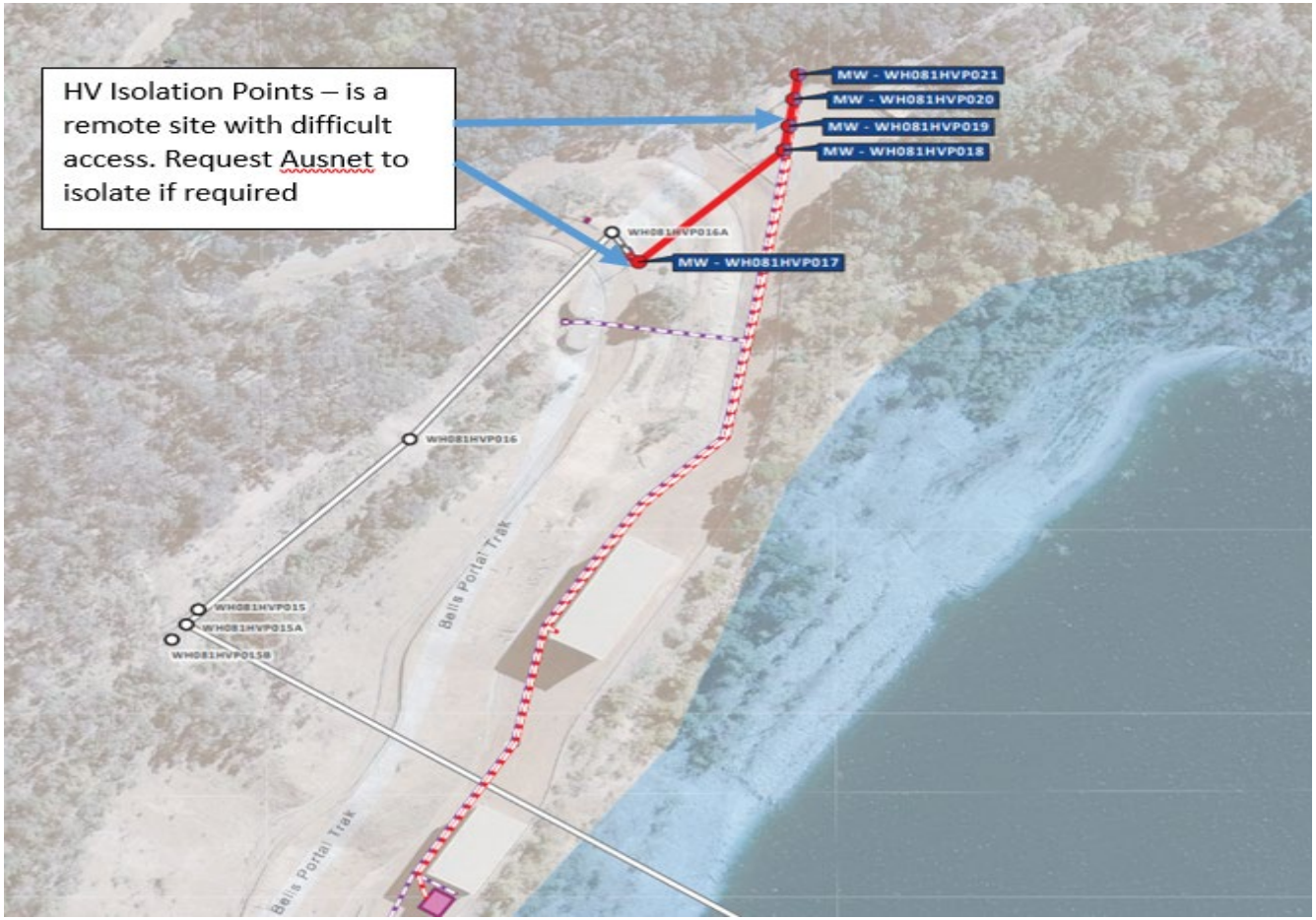
Bells Portal Span.xlsx
https://inflo/inflo/cs.exe/link/54462882

Appendix F: High Voltage Isolation Control Points

The following diagram shows location of High Voltage Isolation Control Points around **Winneke Treatment Plant** and **Yering Gorge**.



The following diagram shows location of High Voltage Isolation Control Points around **Bells Portal.**

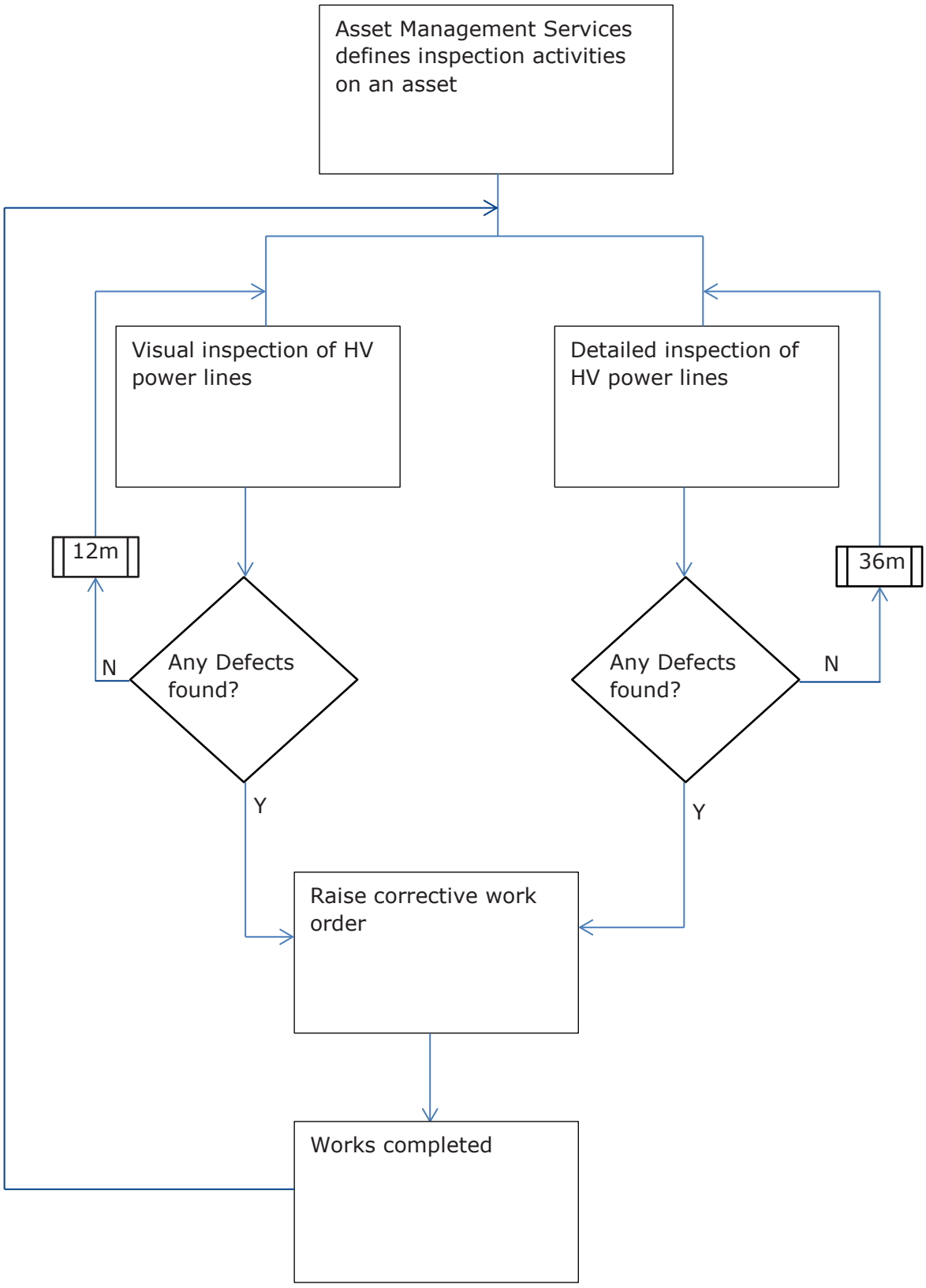


Appendix G: Results of Last Inspection

For details on the 2020 external inspect report see link to report below:

Sugar Loaf Reservoir Power line Report 2020.pdf
http://inflo/inflo/cs.exe/link/54775822

Appendix H: Condition Based Monitoring Management Approach



Appendix I: Vegetation Inspection Report

The following is a link to the Vegetation Inspection Report for 2021:

- Electrical line clearing Report 2021