

FIRE HYDRANT ASSESSMENT REPORT

SELL & PARKER, BLACKTOWN

45 Tattersall Rd, Kings Park NSW 2148

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1. EXECUTIVE SUMMARY

Sparks and Partners have been engaged by the client to investigate the existing fire hydrant system for the Sell & Parker Metal Recovery and Recycling Facility located at 45 Tattersall Rd, Kings Park NSW 2148.

This Fire Hydrant Assessment Report outlines the state and compliance of the existing fire hydrant components. The assessment is only limited to visual inspection and services running in-ground or hidden from view are assumed to be as shown on fire block plans. Fire brigade access, stockpile assessment and water containment strategy are outside the scope of the assessment. It provides observations and recommendations in accordance with AS2419.1-2005 and Fire and Rescue NSW (FRNSW) Guidelines for fire safety in waste facilities V02.02. Further investigations and surveys are required to confirm hose coverage including testing to ensure existing performance of the fire hydrants is compliant.

The existing site is comprised of Building A, Building B (Non-Ferrous Processing), Building C (Flock Processing), Building D (Work shed), Building E (Administration office), Building F (Truck wash) Building L (Processing Building), as well as a fuel & storage area, an open yard scrap metal processing area and a dam. The site is proposed to increase the capacity to receive and process up 600,000 tonnes per annum from 350,000 tonnes per annum as part of the SSD 10396 proposal.

The site is provided with an existing fire hydrant ring main system comprising of sub ring mains with inground and above ground isolation valves. External fire hydrants, water and foam canon hydrants provide fire hydrant protection to the site. The date of installation for the existing fire hydrant system is noted on the block plan as December 2016. The Annual Fire Safety Statement shows that the system is installed to AS2419.1-2005.

The existing fire hydrant system is served by two-off 451kL (902kL total) effective capacity water tanks with a connection to the 300mm Sydney Water mains located along Tattersall Road. The fire hydrant system is served by two off diesel pumps situated in an external pump room. The pump duty is 120 L/s @ 1100 kPa.

Some minor obstructions to fire hydrant accessibility, clearances and maintenance Non-Compliances were noted during the inspection. These shall further be discussed in the report.

The fire hydrant block plan shall be updated to show the north arrow, electrical substation, standard of compliance and the external fire hydrant (FH30) supplied from an old sprinkler pipe, located adjacent Building B. Isolation valve SV34 shall be provided as per the fire hydrant block plan. Several above ground fire hydrant ring main isolating valves are not labelled. Label tags shall be provided to above ground isolating valve as per AS2419.1-2005.

2. SITE DESCRIPTION

The subject site is the existing Sell & Parker Metal Recovery and Recycling Facility located at 23-25 Tattersall Rd and 45 Tattersall Rd, Kings Park NSW 2148. It is bounded on the north by Tattersall Rd. A towing company and automotive wrecking and recycling facility bound the site to the west. The site is bound to the east by Woller Creek and Breakfast Creek to the south.



Figure 1. Site location (courtesy of Six Maps)

The site is situated within two separate lots, being Lot 2, DP 5505222 and Lot 5, DP 7086. The site is accessible via three separate access driveways along the southern side of Tattersall Road. The western and central access driveways being ingress and the eastern being egress. The site consists of a carpark, dam, offices, multiple processing warehouse buildings, a truck wash building, work shed, fuel and oil storage and an open yard scrap metal processing area.

It is understood that the site is proposed to undergo an increase the capacity to receive and process up to 600,000 tonnes per annum from 350,000 tonnes per annum under SSD 10396.

3. EXISTING SERVICES

3.1 Fire Water Supply

It was observed during the inspection that the existing fire hydrant system is served by two-off 451kL (902kL total) effective capacity water tanks with a 300mm connection to the 300mm Sydney Water mains located along Tattersall Road. A 300mm testable double check valve and isolation valve prevents backflow to the incoming water mains. The hydrant tanks are fed from the top and incorporate an air gap that also prevents backflow to the incoming water mains.

3.2 Fire Brigade Booster Assembly

The existing fire hydrant system is provided with 300mm manifold with 3-off booster assemblies located at the landscaped area in front of the site. Each booster assembly consisting of 150mm suction points, 4-pt booster inlets to allow boosting of the hydrant system as well as 150 hard point fire brigade large bore and small-bore suction points.

The fire brigade hardstand is currently being used as a carpark.

3.3 Fire Hydrant Pump

Existing documentation indicates that the fire hydrant system duty is 120 L/s @ 700 kPa. The fire hydrant system is served by two off diesel pumps situated in an external pump room. The pump duty is 120 L/s @ 1100 kPa. There is an electrical pump within the fire pumproom that has the capacity to serve 3 fire monitors.

3.4 Fire Hydrant System

The date of installation for the existing fire hydrant system is noted on the block plan as December 2016. The standard of compliance is not noted on the fire hydrant block plan; however, the Annual Fire Safety Statement shows that the system is installed to AS2419.1-2005.

The site is served by a ring main system comprising of sub ring mains with inground and above ground isolation valves. Due to the nature of the processes on the site posing high risks and hazards, the fire hydrant system incorporates external fire hydrants, foam hydrants, fixed and mobile water cannons, as well as a fire monitoring system consisting of thermal and flame cameras for fire detection in addition to a water deluge system for the stockpiles in accordance with AS2419.1-2005 and/or discussions with FRNSW. There is also a manual water deluge system as well as smoke detection and alarm system within the buildings. Existing maintenance tags show that the fire hydrant system is being routinely maintained.

Building A is sprinkler protected and served by a Ø150 internal sub ring main at high level. External fire hydrants and ring main isolation valves are located on the façade of the Building A. Two above ground isolation valves are located in front of Building A and the fire hydrant pump room.

Building B is separated from Building A by a block wall. It is sprinkler protected and is served by the same Ø150 hydrant internal sub ring main at high level that serves Building A. The building B side ring main isolation valves are located underground. Two external dual fire hydrant standpipes are located away from the building. Building B also has an external fire hydrant located on the façade of the building that is not shown on the block plan, this is noted as FH 30 on the block plan in Appendix B..

Building C is sprinkler protected and served by a Ø150 sub ring main installed internally at high level. External fire hydrants and ring main isolation valves are located on the façade of the Building C.

Building D is a work shed that is provided with a dual fire hydrant standpipe off the site ring main. Building D is provided with drenchers/wall wetting sprinklers at the rear which are connected to the fire hydrant system. The drencher control valve is located on the façade behind Building D.

An external dual fire hydrant standpipe is located in front of the two storey brick administration Building E. The floc building is provided with smoke detection system in addition to a water deluge system for the stockpile.

The fuel and oil storage area is provided with a dual fire hydrant, complete with foam making capability, connected to the site ring main with a stop valve. The pre-shredder open yard is provided with three fire hydrant water cannons located at the top of the Pre-shredder. The pre-shredder and associated water cannons are proposed to be relocated. The scrap metal yard is provided with dual external fire hydrants, some complete with foam making capability, as well as fire hydrant water cannons which are located on top of the Mill support structure.

As part of the previously approved SSD 5041, Modification 3, the existing pre-shredder shall be relocated along with the fire water cannons protecting it.

4. SYSTEM PERFORMANCE

4.1 Fire Water Supply

Existing documentation shows that a pressure and flow result dated 19/07/2016 indicates the flowrate available 95% of the time, from the Sydney water main serving the infill to the fire hydrant tanks is approximately 60 L/s at 63 metres head.

The existing fire hydrant system demand was based on three (3) fire hydrant outlets operating at 10 L/s @ 700 kPa each to protect a 24,500 sqm open yard in accordance with AS2419.1-2005. In addition, the duty includes four (4) water cannons operating at 20 L/s each, resulting in a total demand of 110 L/s for four (4) hours as per discussions between MJ Harvey & Associates and FRNSW.

The existing towns mains had insufficient flow and pressure to supply the fire hydrant system duty of 110 L/s @ 700 kPa, at the time of installation. The towns mains were only capable of providing 60 L/s @ 618 kPa (864,000 L in 4 hours). The hydrant system required a total of 1,584,000 L in four (4) hours. Two off 451, 000 L effective tanks (902,000 L total effective capacity) were provided to compensate for the 720, 000 L towns mains insufficiency in flowrate.

The new FRNSW Guidelines for Waste Facilities V2.02 require four (4) fire hydrant outlets operating at 10 L/s kPa each to protect a 24,500 sqm open yard. This results in a total fire hydrant system duty 120 L/s for four (4) hours, which is a total of 1,728,000 L. Pending a more current pressure and flow enquiry from Sydney water, the existing towns mains (based on the pressure and flow result dated 19/07/2016) and fire hydrant tank have capacity to supply the fire hydrant system flow demand in accordance with the FRNSW Guidelines for Waste Facilities AS2419.1-2005.

4.2 Fire Hydrant Pumpset

Two diesel pumpsets were provided to achieve the fire hydrant system duty. The fire pumps are located in a pump room adjacent the fire water storage tanks. There is an electric pump that can supply three (3) fire monitors. An annubar test line is provided to test the pumps and the test return line directed back to the tanks. The pump duty is observed to be 120 L/s @ 1100 kPa.

The correct design flows of the existing system should be three (3) fire hydrants at 5 L/s @ 700 kPa each (15 L/s @ 700), when boosted by motor driven pump to protect 24,500 sqm open yard (AS2419.1-20005 Table 3.3). We assume that the four (4) water cannons to flow at 20 L/s @ 700 each (80 L/s @ 700 kPa) was and is still acceptable with FRNSW as protection to the stockpiles as previously discussed.

The total fire hydrant system duty under these assumptions is 95 L/s @ 700 kPa which falls under the pump duty curve.

As per the latest FRNSW Guidelines for Waste Facilities V02.02, the existing fire hydrant system requires four (4) fire hydrants at 5 L/s @ 700 kPa each (20 L/s @ 700) for the open yard and the four (4) water cannons to flow at 20 L/s @ 700 kPa each (80 L/s @ 700 kPa) as per original design intent. The existing pump duty has capacity to supply the total required fire hydrant system demand of 100 L/s @ 700 Kpa.

4.3 Recommendations

Subject to the rectification of the non-compliances mentioned in Section 5, the fire hydrant system suits the requirements of the approved SSD 5041, Modification 3 and proposed SSD 10396.

5. SUMMARY OF NON-COMPLIANCES

5.1 Fire Hydrant Booster Assembly

5.1.1 Observation

It was observed that the existing booster valves are not secure or locked in the open position.

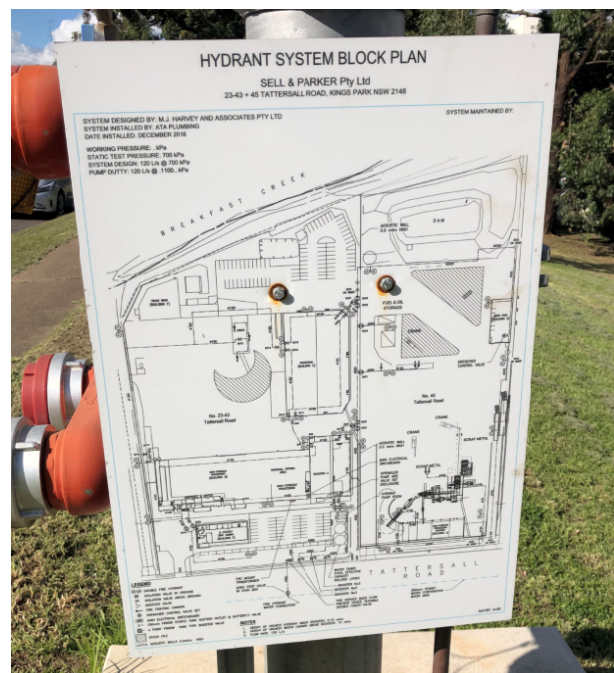
5.1.2 Non-Compliance

Items that require attention:

1. The existing booster assembly is non-compliant due to the booster valves not being secure or locked in the open position.
2. The booster inlet pipes do not have an isolation valves downstream of the booster inlets. Booster inlet pipes are required to have an isolation valve if the head at the inlets can be greater than 50kPa due to the pumps running.
3. No signage to identify the booster assemblies in accordance with Clause 7.10 of AS2419.1 – 2005.
4. FH Block plan has incomplete and incorrect information in accordance with Clause 7.11 of AS2419.1 – 2005
5. The fire brigade hardstand was observed to be non-compliant at the time of inspection due the fire brigade booster assembly being obstructed by parked cars.
6. Boost and Test Pressure signage is not provided for the boosters.

5.1.3 Recommendation for Rectification

1. The booster valves shall be secured in the open position with a padlock openable by the fire brigade 003 key.
2. Isolation valves shall be provided downstream of the booster inlets.
3. Provide separate stands for signage of



the 'FH Booster' and must be adjacent the suction and inlet points to avoid confusion with the adjacent sprinkler booster.

4. Revise Block plan layout to show the actual configuration of the system including FH30 outside Building B, north arrow, connections for fire monitors, standard of compliance and electrical substation. The location of FH25 adjacent the weighbridge shall be updated on the block plan to reflect the accurate location.
5. The fire brigade hardstand shall not be used as parking. Request council to move no-parking sign beyond booster assembly to keep front of boosters clear at all times.
6. Provide a fade-resistant or engraved sign indicating boost and test pressure in kPa, marked in upper case lettering not less than 25mm in height



5.2 Fire Hydrant Pumproom

5.2.1 Observation

It was observed that the signage for the fire pump room was missing.

5.2.2 Non-Compliance

Items that require attention:

The existing fire hydrant pump room is non-compliant because it cannot be identified by appropriate signage.

5.2.3 Recommendation for Rectification

The pump room shall be provided with signage in accordance with AS2941.1-2013.



5.3 Fire Hydrant – FH3

5.3.1 Observation

It was observed during the inspection that the fire hydrant (FH3) located outside Building B did not have any adequate support and did not have any bollard protection.

5.3.2 Non-Compliance

Items that require attention:

1. The existing fire hydrant is non-compliant because supports are required to be located not further than 1 metre from any change in direction or a junction in the pipework. The distance from the last support to the end of any horizontal pipe shall not exceed 1 m.
2. The existing fire hydrant system is non-compliant because AS2419.1 requires fire hydrants and pipework to be located so that the fire hydrant system is protected from possible mechanical damage by vehicles. The fire hydrants required to, but did not have any protection from physical damage



FH 3 missing adequate support and bollard

5.3.3 Recommendation for Rectification

1. Provide adequate pipe support for the horizontal pipe feeding the dual external fire hydrant landing valves.
2. Provide bollard protection to fire hydrant.



FH 3 missing adequate support

5.4 Fire Hydrant– FH 5

5.4.1 Observation

It was observed during the inspection that FH5 did not have any bollard protection and was missing a storz connection and cap.

5.4.2 Non-Compliance

Items that require attention:

1. The existing fire hydrant system is non compliant because AS2419.1 requires fire hydrants and pipework to be located so that the fire hydrant system is protected from possible mechanical damage by vehicles. The fire hydrants required to, but did not have any protection from physical damage
2. The existing fire hydrant system is not compliant due to the fire hydrant not having protective caps to block debris and other contaminants from entering the pipes



FH5 without bollard protection and storz

<p>5.4.3 Recommendation for Rectification</p> <ol style="list-style-type: none"> 1. Provide bollard protection from moving vehicles. 2. Provide storz connection and cap to the fire hydrant 	
<p>5.5 Fire Hydrant– FH 6</p> <p>5.5.1 Observation It was observed during the inspection that FH6 was obstructed by plant equipment.</p> <p>5.5.2 Non-Compliance The existing fire hydrant system is not compliant due to the fire hydrant being obstructed by plant equipment</p> <p>5.5.3 Recommendation for Rectification The obstructions to accessibility of the fire hydrant shall be removed.</p>	 <p>FH6 obstructed by equipment</p>
<p>5.6 Fire Hydrant– FH 7</p> <p>5.6.1 Observation It was observed during the inspection that FH7 was obstructed by plant equipment.</p> <p>5.6.2 Non-Compliance The existing fire hydrant system is not compliant due to the fire hydrant being obstructed by plant equipment</p> <p>5.6.3 Recommendation for Rectification The obstructions to accessibility of the fire hydrant shall be removed.</p>	 <p>FH7 obstructed by equipment</p>
<p>5.7 Fire Hydrant– FH 10 and FH 11</p> <p>5.7.1 Observation</p>	

It was observed during the inspection that FH10 and FH11 were obstructed by plant equipment.

5.7.2 Non-Compliance

The existing fire hydrant system is not compliant due to the fire hydrants being obstructed by plant equipment

5.7.3 Recommendation for Rectification

The obstructions to accessibility of the fire hydrants shall be removed.



FH10 and FH11 obstructed by equipment

5.8 Fire Hydrant– FH 14 and FH 15

5.8.1 Observation

It was observed during the inspection that FH14 and FH15 were obstructed by plant equipment.

5.8.2 Non-Compliance

The existing fire hydrant system is not compliant due to the fire hydrants being obstructed by plant equipment

5.8.3 Recommendation for Rectification

The obstructions to accessibility of the fire hydrants shall be removed.



FH14 and FH15 obstructed by equipment

5.9 Fire Hydrant– FH 16

5.9.1 Observation

It was observed during the inspection that FH16 was obstructed by plant equipment.

5.9.2 Non-Compliance

The existing fire hydrant system is not compliant due to the fire hydrant being obstructed by site fencing.

5.9.3 Recommendation for Rectification

The existing fencing shall be modified to provide access to the fire hydrant.



FH7 obstructed by fencing.

5.10 Fire Hydrant System – FH19

5.10.1 Observation

It was observed that the existing fire hydrant outlet was not covered.

5.10.2 Non-Compliance

The existing fire hydrant system is non-compliant due to the fire hydrant outlet not having protective caps to block debris and other contaminants from entering the pipes.

5.10.3 Recommendation for Rectification

All fire hydrants on site shall be kept covered when not in operation.



FH19 without cover

5.11 Fire Hydrant System – FH22

5.11.1 Observation

It was observed during the inspection that the fire hydrant located adjacent the sprinkler tank (FH22) had a landing valve at approximately 600mm above finished ground level. The hydrant appears to be fed off a branch from the ring main that serves also serves a water cannon. The water cannon is connected to a pipe that was for backwash purposes as advised during the inspection.

5.11.2 Non-Compliance

Items that require attention:

1. The fire hydrant landing valve is non-compliant with AS2419.1-2005 because it is located at a height less than 750mm.
2. The branch pipe from the fire hydrant ring main is required to have an isolation valve if it is serving more than one fire hydrant in accordance with AS2419.1.
3. An isolation valve is required for all connections to the fire hydrant system, shown on the block plan.

5.11.3 Recommendation for Rectification

1. Provide the fire hydrant landing valve between 750mm-1200mm above finished ground level.
2. Provide isolation to be able to isolate the pipe branching from the ring main system.
3. Provide isolation valve for connections from fire hydrant pipework, shown on block plan.



Isolation valve required for FH22 shown above



Isolation valve for connections from fire hydrant pipework, shown on block plan.

5.12 Fire Hydrant– FH 24

5.12.1 Observation

It was observed during the inspection that FH24 was obstructed by existing sheds and did not have a cover.

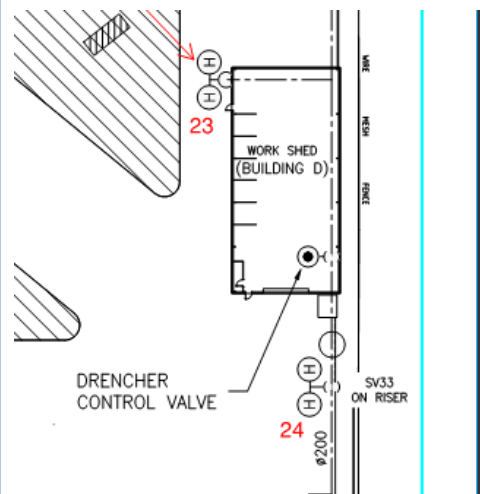
5.12.2 Non-Compliance

Items that require attention:

1. The existing fire hydrant system is not compliant due to the fire hydrant accessibility being obstructed by the existing sheds.
2. The existing fire hydrant system is non complaint due to the fire hydrant outlet without having a protective cap to block debris and other contaminants from entering the pipes.

5.12.3 Recommendation for Rectification

1. The fire hydrant shall be relocated to an accessible location in front of the sheds.
2. The fire hydrant shall be kept covered when not in operation. Caps shall be provided to missing fire hydrants.



Location of FH24

5.13 Fire Hydrant – FH 25

5.13.1 Observation

It was observed during the inspection that FH25 has caps not fitted

5.13.2 Non-Compliance

Items that require attention:

1. The existing fire hydrant system is non complaint due to the fire hydrant outlet without having a protective cap to block debris and other contaminants from entering the pipes.

5.13.3 Recommendation for Rectification

2. The fire hydrant shall be kept covered when not in operation. Caps shall be provided to missing fire hydrants.



FH24 without cover

5.14 Fire Hydrant – FH27

5.14.1 Observation

The fire hydrant standpipe (FH27) located at the scrap metal yard is blocked by debris and it's maintenance tag is unreadable.

5.14.2 Non-Compliance

1. The existing fire hydrant system is non complaint due to the fire hydrant not having protective caps to block debris and other contaminants from entering the pipes.
2. AS2419.1-2005 requires fire hydrant systems need to be regularly inspected, tested and maintained in accordance with AS1851-2012 to ensure continued readiness for use. Where pump sets are installed, regular maintenance is essential.

5.14.3 Recommendation for Rectification

3. The fire hydrant shall be kept covered when not in operation. Caps shall be



FH27 blocked by debris

provided to missing fire hydrants

4. The fire hydrant shall be cleared of the debris and provided with a new maintenance tag in accordance with AS1851-2012.



FH27 blocked by debris



FH27 unreadable maintenance tag

5.15 Fire Hydrant – FH 29

5.15.1 Observation

The existing fire hydrant located outside the site is located approximately 6 metres away from the existing substation.

5.15.2 Non-Compliance

AS2419.1-2005 requires fire hydrants to be located at a distance not less than 10m from high voltage equipment.

5.15.3 Recommendation for Rectification

Relocate the fire hydrant to be at least 10 metres away from the existing substation.



FH29 located too close to substation



Approximately 6 metres clearance measured

5.16 Fire Hydrant System – Isolation Valves

5.16.1 Observation

It was observed during the inspection that many above ground isolation valves did not have tags showing the valve numbers. The below ground isolation valves also did not have any tag or mark showing the valve numbers. SV34 shown on the block plan was not observed during the inspection.

5.16.2 Non-Compliance

1. All above ground isolation valves are required to be clearly identified with a tag showing the valve number on the block plan.
2. Isolating valves installed below ground are required to be suitably tagged or marked by either post reflective marker or reflective paint (to access covers) in 25 mm high text, and shall and be clearly identified with a permanent ground marking showing the valve number on the block plan. Refer to the



Example of SV14 and SV15 not marked

block plan for location

3. AS2419.1 requires each ring or pressure zone to be able to be isolated in 25% increments and isolation valves to be located on any interconnection within the ring main, on the cross-connecting pipe.

5.16.3 Recommendation for Rectification

1. Provide isolation valve tags for all above ground isolation valves showing the valve number on the block plan.
2. Provide reflective paint (to access covers) in 25 mm high text to all inground stop valve. These shall and be clearly identified with a permanent ground marking showing the valve number on the block plan.
3. Provide isolation valve SV34 as shown on block plan.



Example of SV17 and SV18 not marked

5.17 Fire Hydrant System – Protection from Vehicles

5.17.1 Observation

The existing fire hydrant system has pipework and in areas with moving vehicles, without protection of damage from the vehicles.

5.17.2 Non-Compliance

The existing fire hydrant system is non complaint because AS2419.1 requires fire hydrants and pipework to be located so that the fire hydrant system is protected from possible mechanical damage by vehicles. The following pipes are required to, but did not have any protection from physical damage:

- Risers entering Building B from SV19 and SV20
- Risers entering Building B from SV1 and



Risers entering Building B from SV19 and SV20 without bollard protection

SV2

5.17.3 Recommendation for Rectification

The risers serving Building B from shall be provided with bollard protection from moving vehicles.



Risers entering Building B from SV1 and SV2 without bollard protection

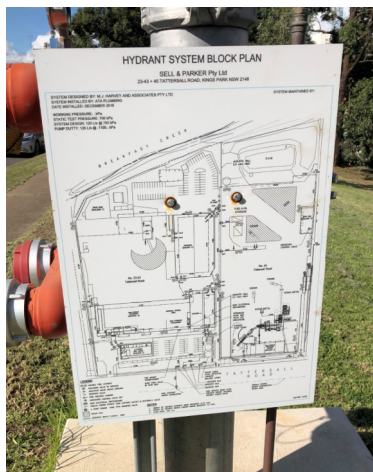
APPENDIX A. SITE PHOTOS



Central site entrance and fire hydrant water storage tanks.



Fire hydrant booster assembly



Fire hydrant block plan



External fire hydrant obstructed by plant equipment



Existing external fire hydrant



Existing water cannons at existing pre-shear



External fire hydrant (FH7) obstructed by plant equipment.



External fire hydrants (FH10 and FH11) and isolation valves (SV9, SV10, SV11) obstructed by plant equipment.



Fire hydrant (FH30) not shown on block plan.



Supply from old sprinkler pipe for fire hydrant (FH30) not shown on block plan.



External fire hydrants and isolation valves obstructed by plant equipment



Numbered isolation valve (SV5).



Foam fire hydrant (FH19).



Fire hydrant installed too low (~600mm)



Drencher control valve.



Wall wetting sprinkler connected to fire hydrant system.



Rear of Pre-Shredder showing line to 3 cannons on top.



Fire hydrant (FH27) blocked with debris.



Unreadable maintenance tag (FH27).



Fire hydrant pumproom missing signage.



Vehicles parked on fire brigade hardstand.



Fire hydrant located within 10m of substation.



Fire hydrant tank label.



Fire hydrant pump information.

APPENDIX B. SITE PLAN NON-COMPLIANCE SKETCH

23-43 + 45 TATTERSALL ROAD, KINGS PARK NSW 2148

MJH REF : 14 023