



## 2022 Halls Gap Fire Plug Audit

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**Version:** 0.9

**Date:** September 2022

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# 1 Introduction

## 1.1 Background

The *Halls Gap Threat & Risk Assessment* rated the failure of the fire plug (FP) network as a High risk.

In order to establish the current status of the network, a physical audit of each fire plug (FP) was completed during the period 12-17 March 2022.

## 1.2 Purpose

This document summarises the results of the 2022 FP audit and council's response.

## 1.3 Audience

This document is intended for review by the Halls Gap Community, staff of the Northern Grampians Shire Council (NGSC), GMMWater, and the CFA.

## 1.4 Assumed Responsibilities

The responsibilities of the three parties associated with the FP network are assumed to be:

- The fire plug network is owned by NGSC. It is responsible under the *Municipal Fire Management Plan 2016 – 2019 Northern Grampians Shire* to “Develop a works program to ensure maintenance of existing hydrants is kept to an adequate standard for the supply of water in an emergency.” It is required to inspect the network and perform maintenance on the above-ground elements e.g. clean out silt, paint marker posts, etc.
- If there are faults with the below-ground parts of the network e.g. the pipework, including valves, GMMWater does the rectification works, and recovers the cost from NGSC.
- The CFA is the major user of the FP network, and has a vested interest in its functionality.

## 1.5 Caveats

This was a ‘quick and dirty’ audit to establish the overall status of the network. It was not a comprehensive audit. For example

- if a FP was completely silted up, it was not cleared out to establish whether the valve was corroded or the dust cap was missing or corroded, and
- if a FP could not be located after a basic search, it was skipped rather than attempting a comprehensive search.

## 1.6 Acknowledgment

Thanks to Warren Ross for sharing his FP expertise, and improving this audit report.

## 1.7 Feedback

Any queries on matters not dealt with in this audit, or suggested corrections to matters included in this audit, should be referred to the Secretary of the Resilience Group via email:

[secretary@resiliencegroup.org.au](mailto:secretary@resiliencegroup.org.au)

or by mail:

The Secretary  
Halls Gap Resilience Group  
Community Association of Halls Gap Inc  
PO Box 57  
Halls Gap VIC 3381

## 2 Audit Details

### 2.1 Process

The audit was completed by physically identifying each FP, using the map shown in Figure 3. Individual FPs were allocated numbers for identification, and these numbers were added to the map. In some cases, there were problems with locating the FPs. For example:

- FP 12 could not be located. The marker post was present, but the plug itself was not evident, and may be under the adjacent path, which has recently been re-surfaced. Similarly FPs could not be found for three other marker posts (probably buried nearby.)
- One of the plugs on Scott Road is shown in the wrong place (see red arrow on map.)
- Five of the FPs appeared to actually be water valves, although in one case a buried FP was later discovered close by, so it is possible FPs are present in the other cases.
- Overall, 18 (11%) of the FPs marked on the map could not be easily located.

Each FP that could be easily found was physically inspected:

- The cover of each plug was opened.
- If it was silted up it was not cleared, so the condition of the valve is unknown.
- If it was partially silted up, and the handle of the dust cap (or 'kettle lid') was visible, the dust cap was lifted and inspected.
- The location and condition of each marker post, and each road marker, was inspected.
- If the marker post carried a distance indication, it was recorded to help with later identification of the FP.

### 2.2 General Comments About the Condition of the Network

Some relatively new FPs were observed in the newer housing developments, and some others were presumably replacements for failed FPs (see examples in Figure 1), but the earliest part of the FP network is over 40 years old, and most of these fittings are exhibiting corrosion, including around the plug valve (see Figure 2.) The corrosion is probably not serious enough to affect the use of the FPs yet, but this should be confirmed by inserting a portable hydrant and slowly opening and slowly closing the valve (to avoid water hammer.)

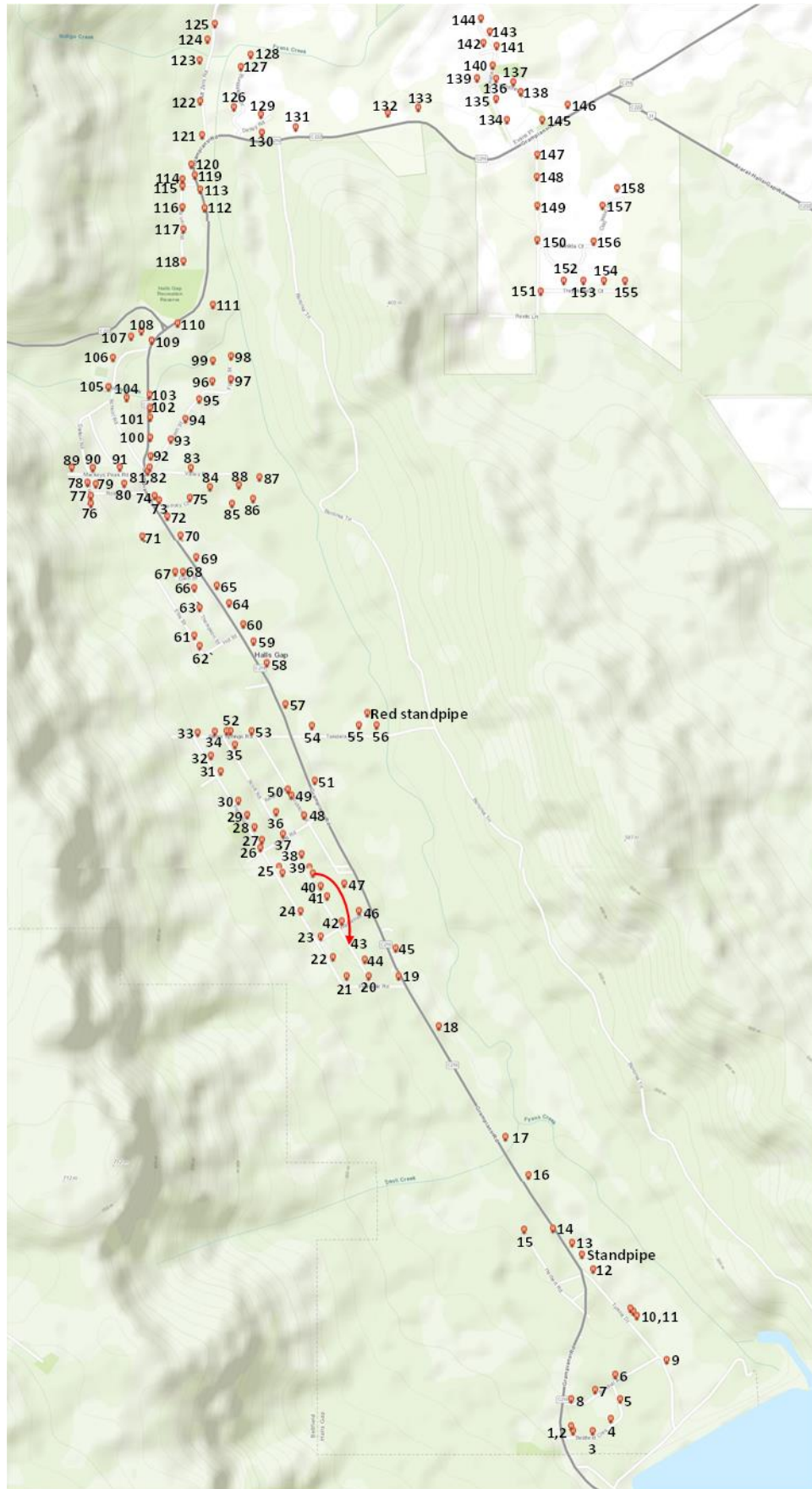
**Figure 1: Relatively New FPs**



**Figure 2: Example of FP Corrosion**



Figure 3: Map of FP Network



Source: Adapted from *Interactive Map of GWM Water Assets*

## 2.3 Specific Findings

The raw data used for these finding is provided in Appendix B. The responses are not complete for all FPs. As indicated earlier, if a plug was silted up, it was not cleared out to establish whether the valve was corroded or the dust cap was missing.

The data reveals that

- 60% of the FPs were silted up, some partially and some completely (see Figure 4.). Damp silt may have encouraged the corrosion affecting most of the network (see 2.2.) Some FPs were infested with ants, some with painful bites. Cleaning the plug out could delay fire fighters attempting to use it by up to 10 minutes, which could be crucial.

**Figure 4: Examples of Silted Up FPs**



- Where the status of the dust cap could be determined, 48% were missing. The cap prevents dirt getting into the valve seat and in most of cases the valve was silted up.
- Of the dust caps present, 73% were corroded as were the valves themselves (see 2.2.)
- With three exceptions, all FPs had the required marker post (typically within 1 metre.)
- Only 63% of the marker posts were *easily* seen from the road from both of the directions a fire truck might approach from. Trees, fallen trees, shrubs, bracken, or poor post location meant that posts were partially or completely concealed. Where the post is too far from the road to be seen, the CFA's *Identification of Street Hydrants for Firefighting Purposes* requires a secondary post near the road. Only two secondary posts were observed (others are needed.) Conversely a secondary post existed next the road, but there was no primary post for the FP which was up to 7 metres away in the scrub. Other problems included wrong-way tapers on the top of posts, use of the wrong post, etc.
- 63% of the marker posts had worn or flaking red paint on their tops (see below.) With inadequate paint protection, some of the tops are rotting. Some bases are rotted also. Marker posts in bushfire-prone areas should be non-combustible (steel or concrete.)

**Figure 5: Worn or Flaking Red Paint on Marker Posts, Rotted Posts**



- 78% of marker posts had the correct blue reflectors. The rest had either one missing or a broken reflector. The colour had faded in some reflectors (see example above.)
- Only 58% of the FPs had road markers (or 'cats eyes'.) The reason for the lack of a marker in 45% of the missing cases was that the roads were unsealed i.e. there was no stable surface to fix the road marker to. However in the remaining 55% of cases of missing road markers (32 FPs) they should have been in place.

- 68% of the road markers did not comply with the CFA's *Identification of Street Hydrants for Firefighting Purposes* in that they were installed at the side of the road instead of close to the centre (but this probably isn't serious enough to require rectification.)
- 20% of the road markers were either partially buried in asphalt, damaged, or had lost their blue reflectivity (see examples below.)

**Figure 6: Example of Defective Road Markers**



- White reflective triangle markers, and vertical surface markers, as specified by the CFA, appear not to be used, and FPs embedded in roads are painted blue instead of white.
- Some residents do not appear to understand the importance of FPs. Examples include:
  - A marker post being used as a stake for a bush planted immediately next to it.
  - A FP buried underneath mulch when a landscaping project was implemented.
  - FPs in paddocks which are not easy to access due to a locked gate or a high fence.
  - Marker posts blocked from view by parked vehicles, nature strip plants, fence posts.

## 2.4 Conclusions

At the time of the audit, the FP network, including the marker posts and road markers, was in generally poor condition. It did not appear to have been inspected for a long period. The major defect was the silting up of the FP housings, which makes the FPs unusable until the silt is removed. Once the silt is removed, the network was probably still functional in all cases, although corrosion was a concern. (Careful testing was recommended to confirm network functionality.)

There were many other more minor problems that need rectification, as listed above under specific findings.

## 2.5 Recommendations

It was recommended:

1. That the NGSC allocate funding and establish a project to refurbish the network i.e. to
  - clean the silt out of FP housings,
  - replace missing dust caps,
  - treat corrosion, and repaint valves to prevent future corrosion,
  - slowly open and slowly close each fireplug valve to see if it works,
  - engage GWMWater to fix any faults in the pipework or valves,
  - clear vegetation from around the FPs,
  - install secondary marker posts (or in some cases primary posts) where needed,
  - fix defects in marker posts and blue reflectors, or replace posts with steel/concrete,
  - replace defective road markers, and install missing road markers, etc.

NGSC has accepted these recommendations with the exception of the fire plug testing. (NGSC is currently in discussion with GWMWater and CFA regarding who will test fireplugs.) As at September 2022, some of the recommended actions had already been completed.

2. That a NGSC 'Adopt-a-fire-plug' campaign be launched so that most of the refurbished network is maintained on an ongoing basis, and that the NGSC establish a formal program of regular audits to monitor the entire network's status, and rectify faults.

NGSC has recently improved its fireplug inspection regime and included it in its road management inspection schedule.

3. That the NGSC prepare and distribute community advice on FPs in support of the above (see draft in Appendix A.)

NGSC is looking at including this information in its pre-season community messaging.

## Appendix A: Community Fire Plug Advice (Draft)

### Fire Plugs as an Aid to Fire Fighting

Fire plugs can be seen throughout the Halls Gap community. They are marked by a white post with a red top and blue reflectors, blue fire plug cover, and blue road marker (on sealed roads only.)

The fire plug network is particularly useful for the CFA in fighting a building or house fire, where the water is drawn from a fire plug near to the fire location.

You can 'adopt-a-fire-plug' to help protect your property. Ensure the fire plugs nearest to you are kept clear, visible and accessible at all times by

- clearing soil, grass and shrubs from around the plug, and not landscaping over it,
- ensuring the marker post and blue plug cover are clearly visible to any fire truck from the road,
- checking that the cavity under the cover isn't silted up or filled with debris or infested with ants,
- keeping vehicles clear of the fire plug and marker post, and
- reporting any visible faults (e.g. corroded valves, missing dust caps), damaged marker posts (e.g. rotted posts, faded paint, blue reflectors missing) or missing or damaged road markers.

You can report a fire plug fault by ringing the Municipal Fire Prevention Officer on 03 5358 8700.

A fire plug network is less useful in a bushfire or urban conflagration where water is drawn by multiple parties from the town's water mains. The CFA cannot rely on the fire plug network in such circumstances, as there is no guarantee that water pressure or an uninterrupted water supply will be maintained. This may be because of

- increased demand for mains water from other residents defending their homes, including the use of roof-top sprinkler systems,
- multiple fire trucks drawing water from the system via the fire plug network and the standpipes at Bellfield Settlement and the fire station,
- extreme heat or fire damage to water supply assets,
- a burst water main, or
- similar problems affecting the availability of water from water mains and the fire plug network.

**Do not rely on the CFA attending your property and using water mains or the fire plug network during a bushfire. Your best strategy is to leave early.**

### If You Plan to Stay and Defend Your Property

Be aware that most homes in bushfire prone areas are not defensible on **Catastrophic** fire danger days, regardless of the facilities installed, or the preparation completed beforehand. You could die or be seriously hurt.

If you plan to stay and defend your property, refer to the CFA's *Defending your Property - Bushfire Survival Planning Template* at <https://www.cfa.vic.gov.au/ArticleDocuments/352/Defending%20your%20Property-V5.pdf.aspx?Embed=Y>.

In this case, it is essential to be prepared with a water supply that is independent of mains water and the fire plug network.

**If you don't have an independent water supply, your best strategy is to leave early.**





## Appendix B: Audit Data

The meaning of the responses included in the table below are:

Y=Yes, N=No, 1=Only 1 of 2 reflectors are present, W=Worn or flaking paint, L=Lost reflectivity, D=Damaged, I=Incorrect installation, C=Correct installation, S=Sealed Road, U=Unsealed Road

Ref. No.	Distance	Easily seen?	Marker post?	Blue reflector?	Red top OK?	Silted up?	Dust cap missing?	Dust cap corroded?	Road marker?				Comments
									Y/N	Condition	Install	Road	
1	0.2	Y	Y	Y	W	N	N	Y	Y	L	I	S	
2	0.4	Y	Y	1	W	N	N	Y	Y	D	I	S	Dust cap screwed down
3		N	Y	1	W	N	N	Y	Y	D	I	S	
4	1.0	Y	Y	Y	W	Y	N	Y	Y		C	S	
5	1.2	Y	Y	Y	W	Y			Y	L	I	S	
6	1.2	Y	Y	Y	W	Y			Y		C	S	
7	1.2	Y	Y	Y	Y	N	N	Y	Y		I	S	
8	0.5	Y	Y	Y	W	Y			Y	D	I	S	
9		Y	Y	Y	Y	N	N	Y	N			S	
10		N	Y	Y	Y	N	Y		N			S	
11		N	Y	N	Y	N	N	N	Y	D	C	S	
12		N	Y	Y	Y				N				Plug not found near post (buried?)
13		N	Y	Y	W	Y	Y		Y		C	S	
14	0.2	N	Y	Y	W	Y	Y		N			U	No road marker as unsealed road
15	0.2	Y	Y	1	Y	Y	Y		N			U	No road marker as unsealed road
16		N	Y	1	Y	Y	N		N			S	
17		N	N	N	N	Y	N		Y		C	S	Post is not a fire plug marker post, and is damaged
18		N	Y	Y	Y	N	Y		N			S	Post is too far from road to be seen.
19	0.2	Y	Y	1	W	Y	Y		N			U	Marker post damaged (section split off)
20	0.5	N	Y	Y	W	Y			N			S	
21													Not a FP – water valve
22	0.4	N	Y	Y	W	Y			N			U	No road marker as unsealed road
23	0.7	N	Y	Y	W	Y			N			U	No road marker as unsealed road
24	0.9	Y	Y	Y	W	Y			N			U	Blue reflector broken, no road marker as unsealed road
25	0.7	Y	Y	Y	Y	Y			N			U	
26	0.4	N	Y	1	W	N	N	Y	Y		I	S	
27	0.5	Y	Y	Y	W	Y	N	Y	Y		I	S	

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Ref. No.	Distance	Easily seen?	Marker post?	Blue reflector?	Red top OK?	Silted up?	Dust cap missing?	Dust cap corroded?	Road marker?				Comments
									Y/N	Condition	Install	Road	
28	0.3	N	Y	Y	W	Y			Y		I	S	
29	0.4	Y	Y	Y	W	Y			Y		I	S	
30	0.6	N	Y	Y	W	Y			Y		I	S	
31	0.8	N	Y	Y	W	Y	N	Y	Y		I	S	Silt underneath dust cap
32	0.8	N	Y	Y	W	Y			Y		I	S	
33	0.7	Y	Y	Y	W	N	Y		Y		I	S	Blue reflector broken
34	0.7	Y	Y	Y	Y	Y			Y		I	S	
35	1.0	Y	Y	Y	Y	Y			N			U	No road marker as unsealed road
36		Y	Y	Y	Y	N	Y		N			U	No road marker as unsealed road
37	0.5	Y	Y	Y	W	Y			N			S	
38		N	Y	Y	W	N	Y		N			U	No road marker as unsealed road
39	2.5	N	Y	Y	Y	Y			N			U	Wrong taper on marker post
40	0.7	Y	Y	Y	W	Y			N			U	Marker post damaged (section split off)
41	0.5	N	Y	Y	W	Y	N	Y	N			U	No road marker as unsealed road
42		Y	Y	Y	W	N	Y		N			U	No road marker as unsealed road
43	1.0	N	Y	Y	W	Y			N			U	Buried, blocked by vehicle
44	0.5	Y	Y	Y	W	Y			N			S	
45	1.0	N	Y	Y	W	Y			N			S	Marker post heavily rotted at base
46	0.5	N	Y	1	W	Y			N			U	Marker post split on one corner
47													No marker post or FP found
48	0.2	N	Y	Y	W	Y	Y		N			S	
49	0.3	Y	Y	Y	W	N	Y		N			U	
50	0.3	N	Y	Y	W	Y			N			U	
51	0.7	N	Y	Y	W	N	Y		Y		I	S	
52	1.0	N	Y	Y	W	Y	N	Y	Y	D	I	S	
53	0.6	N	Y	Y	W	Y	N	Y	Y		I	S	Silt under dust cap
54	0.6	Y	Y	Y	W	Y			Y		C	S	
55	0.5	Y	Y	Y	W	N	N	Y	Y		I	S	
56	0.5	Y	Y	1	W	Y			Y		I	S	
57	1.0	N	Y	Y	W	Y			Y		I	S	View blocked by fence
58		N	Y	Y	Y	Y	N	Y	Y		I	S	Post blocked by nature-strip plants
59		Y	Y	Y	Y	Y	N	Y	Y	D	I	S	Silt under dust cap
60		Y	Y	Y	Y	Y	Y		Y	D	I	S	
61	0.2	Y	Y	Y	Y	Y	N	Y	Y		C	S	

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Ref. No.	Distance	Easily seen?	Marker post?	Blue reflector?	Red top OK?	Silted up?	Dust cap missing?	Dust cap corroded?	Road marker?				Comments
									Y/N	Condition	Install	Road	
62	1.2	Y	Y	Y	W	N	Y		Y		C	S	
63	0.4	Y	Y	1	W	N	Y		N			S	
64	0.5	Y	Y	Y	Y	N	Y		Y		I	S	
65													Not a FP
66	3.3	Y	Y	Y	Y	Y	Y		N			S	
67													Not found - possibly a tank?
68	0.6	Y	Y	1	Y	Y			N			S	
69	0.4	Y	Y	Y	W	Y	N	Y	Y	D	I	S	Silt under dust cap
70	0.7	Y	Y	Y	W	Y	N	Y	Y		I	S	Rotted top of post
71													Not found
72		Y	Y	Y	W	Y			N			S	
73	0.7	Y	Y	Y	W	Y			Y	D	I	S	Corner of post split off
74													Not found
75	0.7	Y	Y	Y	W	Y			N			S	
76	3.1	N	Y	Y	W				N			U	FP not found, marker post blocked by separate post
77													Not found
78		N	Y	1	W				N			U	Secondary post used, but FP not found
79	0.3	N	Y	1	W	N	Y		N			S	
80	0.5	Y	Y	Y	W	N	Y		N			S	
81	0.7	Y	Y	Y	W	N	Y		Y		I	S	Rotted base
82	1.0	Y	Y	Y	Y	Y			Y		I	S	
83		Y	Y	1	Y	N	Y		N			U	
84		Y	Y	1	Y	N	Y		N			U	
85													Not found
86													Not found
87													Not found
88		N	Y	1	W	N	Y		N			U	
89													Not found
90	0.5	N	Y	Y	W	Y			Y	D	I	S	
91	0.6	Y	Y	Y	W	N	Y		N			S	
92		Y	Y	Y	Y	N	N	Y	Y		C	S	
93		Y	Y	Y	W	N	N	Y	Y		C	S	Post rotted on top of post
94	0.8	Y	Y	Y	W	N	Y		Y		I	S	Rotted base of post
95	0.6	Y	Y	Y	W	N	Y		Y		I	S	Rotted top of post

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Ref. No.	Distance	Easily seen?	Marker post?	Blue reflector?	Red top OK?	Silted up?	Dust cap missing?	Dust cap corroded?	Road marker?				Comments
									Y/N	Condition	Install	Road	
96		Y	Y	Y	Y	Y	Y		N			S	
97	1.0	Y	Y	1	W	N	N	Y	Y		I	S	Rotted top of post
98	0.4	Y	Y	1	Y	N	Y		N			S	Rotted base of post
99		Y	Y	1	W	Y			N			U	Rotted top and base of post
100													Not found
101		N	N	N	N	N	N	Y	Y		I	S	No marker post, no vertical surface marker
102													Not found
103		N	N	N	N	N	Y		Y		C	S	No marker post, no vertical surface marker
104													Not found
105													Not a FP
106													Not found
107	3.4	N	Y	1	W	Y			Y		C	S	
108	1.0	N	Y	N	Y	Y			N			S	
109		N	Y	1	W	N	Y		N			S	
110		Y	Y	Y	W	N	N	N	Y		I	S	Rotted top and base of post
111	1.0	N	Y	Y	W	Y			N			S	Rotted top of post
112	0.4	Y	Y	Y	W	Y			Y		I	S	FP buried under mulch of landscaping
113	0.8	Y	Y	Y	W				N			S	FP buried under driveway stones (not found)
114		Y	Y	Y	Y				N			S	FP embedded in road, couldn't open, not painted white
115		Y	Y	Y	Y	Y	N	Y	N			S	Easily blocked by vehicle parking
116	0.4	Y	Y	Y	W	Y	N	Y	N			S	
117	0.5	N	Y	Y	W	Y	Y		N			S	
118	0.7	N	Y	Y	W	Y	Y		N			U	In private garden, blocked by bush
119	0.7	Y	Y	Y	W	Y			Y		I	S	
120		N	Y	Y	Y	N	N	Y	Y		I	S	
121	0.3	Y	Y	Y	W	N	N	Y	Y		I	S	
122		Y	Y	Y	Y	N	N	Y	Y	D	I	S	
123	0.4	Y	Y	Y	W	Y	N	Y	Y		I	S	
124		N	Y	1	N	Y	N	Y	Y		I	S	Rotted top of post
125	0.4	N	Y	Y	W	N	N	Y	Y		C	S	
126		Y	Y	Y	Y	N	N	N	Y		C	S	
127		Y	Y	1	W	N	N	N	Y		C	S	Faded red top
128		Y	Y	1	Y	N	N	N	Y		I	S	
129		Y	Y	1	Y	Y	Y		N			S	FP buried under grass

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Ref. No.	Distance	Easily seen?	Marker post?	Blue reflector?	Red top OK?	Silted up?	Dust cap missing?	Dust cap corroded?	Road marker?				Comments
									Y/N	Condition	Install	Road	
130													Not found
131													Not found
132	0.5	N	Y	Y	W	Y			Y		C	S	Road marker buried in asphalt, marker post leaning
133	0.4	Y	Y	1	W	Y			Y		C	S	Road marker buried in asphalt
134		Y	Y	Y	W	Y			Y	D	C	S	
135	2.0	Y	Y	Y	W	Y			Y		C	S	
136	2.5	Y	Y	Y	W	N	Y		Y		C	S	Seemed to be a water valve but buried FP found nearby
137	2.5	Y	Y	Y	Y	Y	Y		Y		C	S	
138		Y	Y	Y	W	N			Y		C	S	
139		N	Y	Y	W	N	N		N			S	FP in paddock behind locked gate
140	2.5	Y	Y	Y	W	N	Y		N			S	
141		Y	Y	Y	N	N	N		Y		C	S	
142		Y	Y	Y	N	N	Y		Y		C	S	
143		Y	Y	Y	N	N	N		Y		C	S	
144		Y	Y	Y	N	N	Y		Y		I	S	
145		N	Y	Y	Y	Y	N	Y	N			S	
146		N	Y	Y	N	Y			Y		I	S	Secondary post in use, FP behind high fence
147	0.3	Y	Y	Y	Y	N	N		Y		C	S	
148	0.3	Y	Y	Y	Y	Y	Y		Y		I	S	
149	0.3	N	Y	Y	Y	Y			Y		I	S	
150	0.3	Y	Y	Y	Y	Y			Y		I	S	
151	2.0	Y	Y	Y	Y	N	N		Y		I	S	
152	3.0	Y	Y	Y	Y	Y			Y		I	S	
153	7.0	Y	Y	Y	Y	Y			Y		I	S	Post is visible, FP is harder to find (7 metres away)
154	7.0	Y	Y	Y	Y	Y			Y		I	S	Post is visible, FP is harder to find (7 metres away)
155	5.0	Y	Y	Y	Y	Y			N			U	Post is visible, FP is harder to find (5 metres away)
156		N	Y	Y	Y	Y	N	Y	Y		I	S	Wrong taper on post
157		Y	Y	Y	N	N	Y		Y		C	S	
158		Y	Y	Y	Y	Y			Y		I	S	