Archaeological Impact Assessment

Proposed refurbishment of the Ernest Robertson Pipeline, Great Brak River, Mossel Bay Municipality, Mossel Bay, Western Cape Province

prepared for

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by

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Executive Summary

An Archaeological Impact Assessment (AIA) and heritage scoping study (for HWC NID) were conducted for the above-named project on 24 March 2010. The entire study was conducted in previously disturbed areas. Disturbances by recent human activities include structures in the village of Friemersheim, roads, agricultural activities, farm fences and vehicle tracks. The study area is variably vegetated but adequate expanses of ground surfaces were visible for archaeological assessment.

Three archaeological occurrences were identified including;

1. *houses and buildings older than 60 years that are located adjacent to the proposed pipeline alignment. These structures will not be impacted by the proposed activity and therefore no further studies or mitigation measures are required.*
2. *Early and Middle Stone Age artefacts associated with a trench and found in secondary context. Though these materials indicate the presence of similar artefacts in the area, their location and that of the proposed pipeline route are in a road reserve and disturbed area. Their significance is considered low and no measures in mitigation are required.*
3. *A small fenced cemetery containing at least 8 graves is situated in the vicinity of the proposed pipeline alignment. See recommendation below.*

Provided that the recommended mitigation measure – as approved by Heritage Western Cape - is implemented, it is suggested that the proposed activity be approved.

It is recommended that;

- *The small cemetery must be avoided during the installation of this portion of the pipeline.*

Note that;

- *If archaeological materials are exposed during vegetation clearing and/or earth moving activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer. In the event of exposing human remains during construction, the matter will fall into the domain of Heritage Western Cape (Mr. Nick Wiltshire) or the South African Heritage Resources Agency (Ms Mary Leslie) and will require a professional archaeologist to undertake mitigation if needed.*

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ACRONYMS

AIA – Archaeological Impact Assessment

HWC – Heritage Western Cape

NID – Notification of Intent to Develop

ESA – Early Stone Age (350 000 years and older)

MSA – Middle Stone Age (350 000 to about 30 000 years ago)

LSA – Later Stone Age (30 000 to about 2000 years ago)

1. Introduction

1.1 Background

In relation to the proposed refurbishment of the Ernest Robertson Pipeline, Great Brak River, Mossel Bay, Western Cape Province (Figures 1 through 5), Mr Danie Wessels of MVD Raadgewende Ingenieurs (Suid-Kaap) (Edms.) Bpk. and on behalf of the Mossel Bay Municipality, appointed CHARM to conduct an Archaeological Impact Assessment (AIA) and heritage scoping study (for HWC NID) of the affected properties in accordance with Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Although a considerable length of the existing Ernest Robertson Pipeline will be refurbished, only two relatively short sections of the renovation occur along revised alignments. It is for these two portions of the proposed activity that the AIA and heritage scoping study (for HWC NID) were conducted (Figures 1 though 5). Only the affected portions of properties, and not their entire extents, were investigated. No earlier archaeological work was conducted in the vicinity of the study area.

The vast bulk of the affected area falls within existing road reserves, but properties affected or bordering on the proposed activity include Ptn 6 of the Farm Moordkuyl 38, Farm 27/1, 33/4, 33/1, 33/2 (north section of pipeline), Farm 330, 129/147 & 129/148 (south section of pipeline).

At the two previously unaffected localities, the proposed activity involves the excavation of a narrow trench (less than 500mm wide) with a combined length of approximately 6.4km. Water pipes of 110mm and 250mm diameter will be installed at the northern and southern sections respectively (Figures 2 & 4).

Proposed development activities that will potentially affect archaeological resources in the study area include:

- Earthmoving activities for the construction and installation of a 6.4km x 0,11 & 0.25 m diameter pipelines.

The layout plans are shown in Figures 2 & 4, coordinate data are presented in Table 1, and further details and specifications can be obtained from Mr. Danie Wessels – see contact details on title page of this report.

1.2. Purpose and Scope of the Study

Objectives of the Archaeological Impact Assessment and heritage scoping study are:

- To assess the study area for traces of archaeological and heritage related resources;
- To identify options for archaeological mitigation in order to minimize potential negative impacts; and
- To make recommendations for archaeological mitigation where necessary
- To identify heritage resources and issues that may require further attention and to complete the HWC NID form.

Terms of Reference (ToR):
a) Locate boundaries and extent of the study area.
b) Literature review of earlier archaeological work in and near study area
c) Conduct a survey of the study area to identify and record archaeological and heritage related resources.

d) Assess the impact of the proposed development on above-named resources.
e) Recommend mitigation measures where necessary.
f) Prepare and submit a report to the client that meets standards required by Heritage Western Cape in terms of the National Heritage Resources Act, No. 25 of 1999
g) Prepare and submit HWC NID form.

As requested, a Heritage Western Cape (HWC) Notice of Intent to Develop (NID) form was completed, signed by the author and submitted with this document.

1.3 Study Area

The study area consists of two linear strips including a road servitude registered to the Mossel Bay Municipality, and parts run across several properties including Ptn 6 of the Farm Moordkuyl 38, Farm 27/1, 33/4, 33/1, 33/2 (north section of pipeline), Farm 330, 129/147 & 129/148 (south section of pipeline). The southern and northern sections of the study area are 4km and 11km NW and NNW from the village of Great Brak River, which is located some 24km NNE of Mossel Bay on the Cape South Coast (Figure 1). No alternative routes for the pipeline route are offered.

The study areas were accessed by vehicle via the N2 from Mossel Bay and by taking the Great Brak River exit and turning left at the end of the off-ramp, left at the 3rd stop sign and following the same road to both portions of the pipeline route (see red direction arrows in Figure 1).

The proposed pipeline route in both study areas is disturbed by relatively recent human activities including road construction, previous installation of pipeline, farming activities, installation of fences, vehicle tracks and the village of Friemersheim at the NW extent of the northern study area. Apart from a small stretch at the N extent of the northern study area – where indigenous thicket and forest occur – no unaffected indigenous vegetation was seen (Figures 2 through 5). Examples of the immediate environment – development, vegetation, topography and so on - bordering the study area are shown in Plates 1 through 6.

Table 1. Coordinate data for pipeline route in study areas (Figures 2 through 5)

Name	Description	Datum: WGS 84 Lat/Lon dec.degrees	Datum: WGS 84 Grid: SA National
A1	pipeline route point	S33.93820 E22.16722	23 Y0076993 X3757119
A2	pipeline route point	S33.95334 E22.17204	23 Y0076533 X3758795
A3	pipeline route point	S34.01614 E22.19231	23 Y0074605 X3765746
B1	pipeline route point	S33.94034 E22.16965	23 Y0076766 X3757355
B2	pipeline route point	S33.95088 E22.16541	23 Y0077149 X3758527
B3	pipeline route point	S34.01765 E22.19258	23 Y0074579 X3765914
C1	pipeline route point	S33.94324 E22.16980	23 Y0076750 X3757676
C2	pipeline route point	S33.95007 E22.16174	23 Y0077489 X3758440
D1	pipeline route point	S33.94762 E22.17051	23 Y0076680 X3758161
D2	pipeline route point	S33.94948 E22.15979	23 Y0077669 X3758376
D3	pipeline route point	S34.02034 E22.19019	23 Y0074797 X3766214
E1	pipeline route point	S33.94973 E22.17223	23 Y0076519 X3758394
E2	pipeline route point	S33.94709 E22.15526	23 Y0078091 X3758114
E3	pipeline route point	S34.02207 E22.18697	23 Y0075093 X3766408
F1	pipeline route point	S33.95334 E22.17204	23 Y0076533 X3758795
F2	pipeline route point	S33.94578 E22.14851	23 Y0078715 X3757974
F3	pipeline route point	S34.02322 E22.18489	23 Y0075284 X3766537
G2	pipeline route point	S33.94801 E22.14686	23 Y0078866 X3758223
H2	pipeline route point	S33.94891 E22.14461	23 Y0079073 X3758325
I2	pipeline route point	S33.95236 E22.14270	23 Y0079247 X3758709

1.4 Approach to the Study

No previous archaeological work was conducted in the surroundings of the study areas. It was anticipated that heritage related resources of the colonial period may occur in the study areas. The proposed activity involves subsurface installations and therefore, certain heritage related resources will not be affected (e.g., visual and aesthetic impact, cultural landscape, etc.).

On behalf of MVD Raadgewende Ingenieurs (Suid-Kaap) (Edms.) Bpk, Ms Melissa Mackay of Cape EAPRAC provided background information, layout plans and coordinate data for the study area (Figures 2 & 4 and Table 1). Mr Danie Wessels provided a detailed layout and specifications drawing. Initially, the study area was visited with the contractor - Mr Andre Nel - and thereafter the study was performed alone.

The survey was conducted on foot and the entire study area was accessible with adequate ground surfaces exposed for archaeological inspection and assessment.

Survey tracks were fixed with a hand held Garmin Camo GPS to record the search area (Figures 3 & 5, gpx tracking file submitted to HWC and is available from author). Observations and photo localities were also fixed by GPS (Figures 3 & 5, Plates 1 through 6 and Table 2). Digital audio notes and a high quality, comprehensive digital photographic record were also made (full data set available from author). Localities of photographs are established by matching the numbers on photographs with those of waypoints in Figures 3 & 5. Directions of views are indicated with compass bearing names like E is east; WSW is west south west, and so on. The walk track directly from waypoint 21 and ending between waypoints 14 and 15 is a return track and not part of the survey (Figure 2).

2. Results

On 24 March 2010, in approximately 3 hours of survey, a distance of 12.4km was walked, covering an area of about 8.6ha, of which an average of around 30% provided good archaeological visibility (Figures 3 & 5 and Plates 1 through 6). Sediments in the study areas are partly or fully disturbed.

2.1 Waypoint 2 - snd6637, img6636-7 (Figure 3, Plate 5 and Table 2)

These are two houses that are certainly older than 60 years, but lie well beyond the proposed pipeline route and will in no way be impacted by it.

Significance & Recommendation: Though these heritage resources are significant, they will not be impacted by the proposed activity, and no further research or measures in mitigation are required.

2.2 Waypoint 26 - snd6687, img6679-87 (Figure 3, Plates 5 & 6 and Table 2)

This is a small fenced graveyard immediately SE of the gravel road that runs through Friemersheim. Overall the graveyard is in a disused state with broken and dilapidated fences, broken and fallen headstones and the graves are overgrown with vegetation. The extent of the fenced area is about 100m2 and 8 graves were counted, but more may be obscured by vegetation growth over most of the cemetery. All graves are E-W aligned. One grave is large and can potentially contain the remains of three individuals. Dates on most of

the graves are around 1945, but some are dated to 1927 and 1938. Photographs were taken of individual head stones showing their designs and inscriptions, and the photographs are available on request. One or two head stones are in marble and the rest are in concrete. Four of the concrete head stones are of identical design. No other, associated cultural remains were identified, though materials may be covered by vegetation and/or leaf litter.

Significance & Recommendation: The cemetery is considered of high significance and the pipeline route – if not already adjusted - must be aligned so that it skirts the fenced area of the cemetery.

2.3 Waypoint 31 - snd6699, img corrupt (Figure 5 and Table 2)

Archaeological material occurs on the edge of and in association with materials excavated from a trench and is therefore in a disturbed context. The trench is within the road reserve and adjacent to a game fence. One small hand axe, potentially of the Fauresmith or early Middle Stone Age period, a disc core and a flake of MSA origin were recorded. Other artefacts are likely to occur along the trenched area. Photographs were corrupted.

Significance & Recommendation: These finds are in a disturbed context and therefore considered of low significance. No further research or measures in mitigation are required.

Table 2. Coordinate and descriptive data for finds and observations.

Name	Description img=image file snd=sound file	Datum: WGS 84 Lat/Lon dec.degrees	Datum: WGS 84 Grid: SA National	Age	Type	Extent	Density	Cultural
1	img6634-5 snd6635	S33.95234 E22.14280	23 Y0079238 X3758705					
2	historic structures img6636-7 snd6637	S33.95195 E22.14337	23 Y0079185 X3758663	historic	structures	NA	NA	houses - buildings
3	img6638 snd6638	S33.95155 E22.14359	23 Y0079165 X3758618					
4	img6639 snd6639	S33.95109 E22.14377	23 Y0079149 X3758566					
5	img6640-1 snd6641	S33.94893 E22.14475	23 Y0079061 X3758326					
6	img6642-3 snd6643	S33.94809 E22.14628	23 Y0078919 X3758232					
7	img6644 snd6644	S33.94689 E22.14806	23 Y0078756 X3758097					
8	img6645-7 snd6647	S33.94577 E22.14858	23 Y0078709 X3757973					
9	img6648 snd6648	S33.94586 E22.14936	23 Y0078638 X3757982					
10	img6649 snd6649	S33.94606 E22.15170	23 Y0078421 X3758002					
11	img6650-1 snd6651	S33.94703 E22.15525	23 Y0078092 X3758107					
12	img6652 snd6652	S33.94845 E22.15855	23 Y0077785 X3758263					
13	img6653 snd6653	S33.94922 E22.15965	23 Y0077683 X3758347					
14	img6654-5 snd6655	S33.94975 E22.16101	23 Y0077557 X3758405					
15	img6656-7 snd6657	S33.95043 E22.16370	23 Y0077307 X3758478					
16	img6658-9 snd6659	S33.95310 E22.17200	23 Y0076537 X3758768					
17	img6660-1 snd6661	S33.94965 E22.17228	23 Y0076515 X3758385					
18	img6662-3 snd6663	S33.94296 E22.16991	23 Y0076740 X3757644					
19	img6664-5 snd6665	S33.94195 E22.16976	23 Y0076755 X3757533					
20	img6666-8 snd6668	S33.94035 E22.16967	23 Y0076765 X3757356					
21	img6669 snd6669	S33.94008 E22.16923	23 Y0076806 X3757326					
22	exisitng pipeline in cut ledge in ravine img6670-1 snd6671	S33.93964 E22.16814	23 Y0076906 X3757278					
23	exisitng pipeline in cut ledge in ravine img6672-4 snd6674	S33.93964 E22.16814	23 Y0076906 X3757278					
24	exisitng pipeline in cut ledge in ravine img6675-6 snd6676	S33.93905 E22.16744	23 Y0076972 X3757213					
25	exisitng pipeline in cut ledge in ravine NW end of study area	S33.93776 E22.16670	23 Y0077041 X3757070					
26	historic cemetery img6679-87 snd6687	S33.94855 E22.14517	23 Y0079022 X3758284	historic	graves	approx 100m^2	at least 8 graves	early to mid 20th C
27	img6688-9 snd6689	S34.01609 E22.19245	23 Y0074592 X3765740					
28	img6690 snd6690	S34.01737 E22.19264	23 Y0074574 X3765882					
29	img6691 snd6691	S34.01879 E22.19235	23 Y0074599 X3766040					
30	img6692-4 snd6694	S34.02217 E22.18688	23 Y0075101 X3766419					
31	ESA&MSA img-corrupt snd6699	S34.02309 E22.18522	23 Y0075254 X3766522	ESA-MSA	open	NA	NA	hand axe, disc core
32	img corrupt no sndfile	S34.02321 E22.18500	23 Y0075274 X3766536					

3. Sources of Risk, Impact Identification and Assessment

Proposed development activities that may have a permanent negative impact on archaeological resources in the study area include:

- Earthmoving activities for the installation of a 6.4km x 0.5m pipeline

Earthmoving activities may penetrate sediments unaffected by previous disturbances. Results of the study suggest that the presence of subsurface archaeological materials of significance is unlikely. Although the location of the cemetery may be known and considered by the applicant, it is reiterated that the pipeline route must avoid this heritage resource.

Table 3 summarizes the potential impact of the proposed development on archaeological resources with and without mitigation.

Table 3. Potential impact on and loss of archaeological resources with specific reference to the cemetery recorded at waypoint 26.

	With Mitigation	Without Mitigation
Extent	Local	Local
Duration	Permanent	Permanent
Intensity	None	High
Probability	None	Unknown
Significance	High	High
Status	High	High
Confidence	High	High

Provided that the recommended mitigation measure - as approved by Heritage Western Cape - is implemented, it is recommended that the proposed activity be approved.

4. Required and Recommended Mitigation Measures

The following measures are required:

- In the event that vegetation clearing and earthmoving activities expose archaeological or paleontological materials, such activities must stop and Heritage Western Cape must be notified immediately.
- If archaeological materials are exposed through earthmoving activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer(s) and/or property owner(s).
- Unmarked human burials may occur anywhere in the landscape and are often exposed during earthmoving activities. Human remains are protected by law and, if older than 60 years, are dealt with by Heritage Western Cape (Mr. Nick Wiltshire 021 483 9685) or the State Archaeologist at the South African Heritage Resources Agency (Mrs. Mary Leslie who can be reached at 021 462 4502).

It is recommended that;

- The small cemetery must be avoided during the installation of this portion of the pipeline.

Figures and Plates (on following pages)

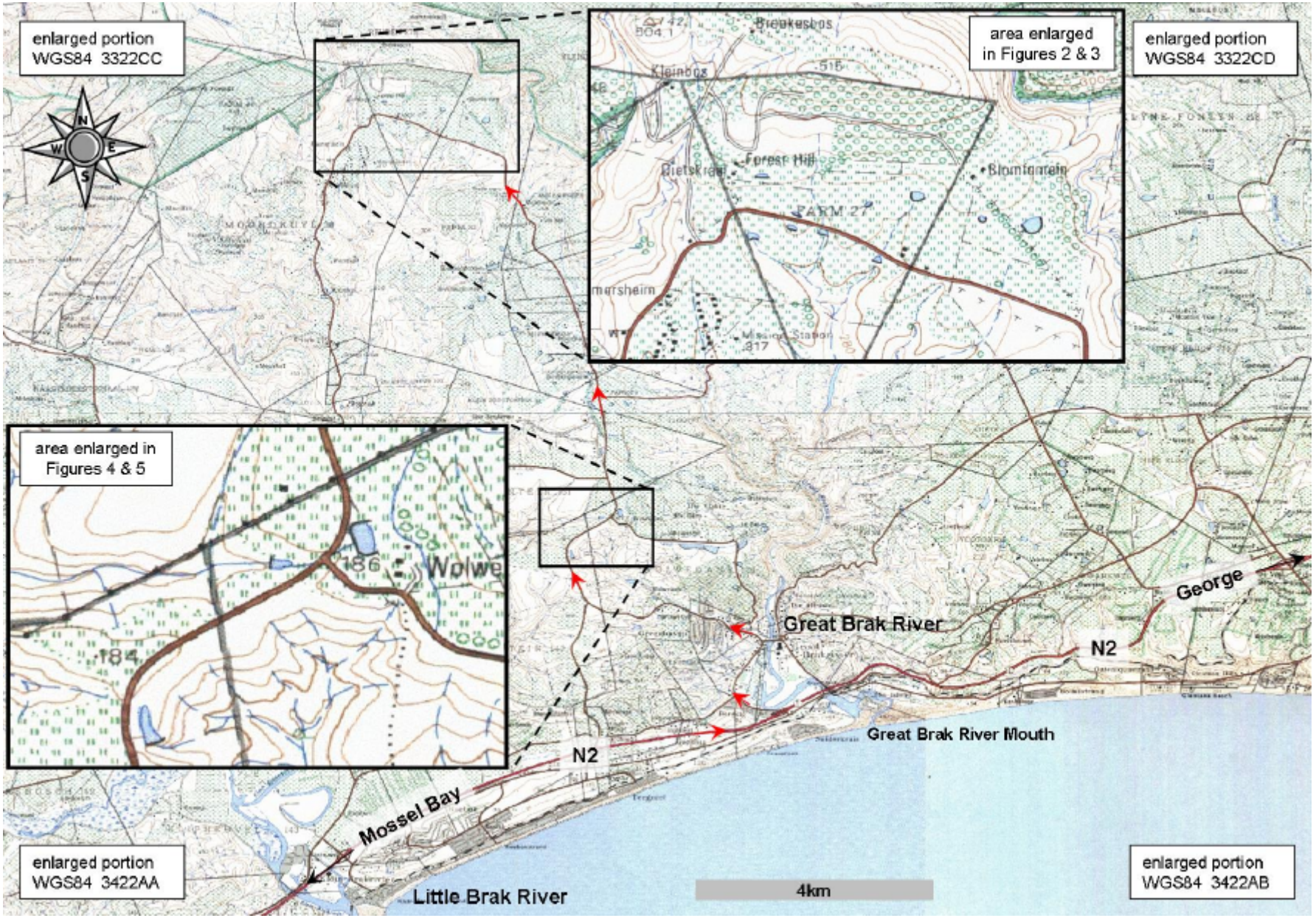

Figure 1. General location of study areas relative to Great Brak River, Western Cape Province. Map courtesy Surveys and Mapping.

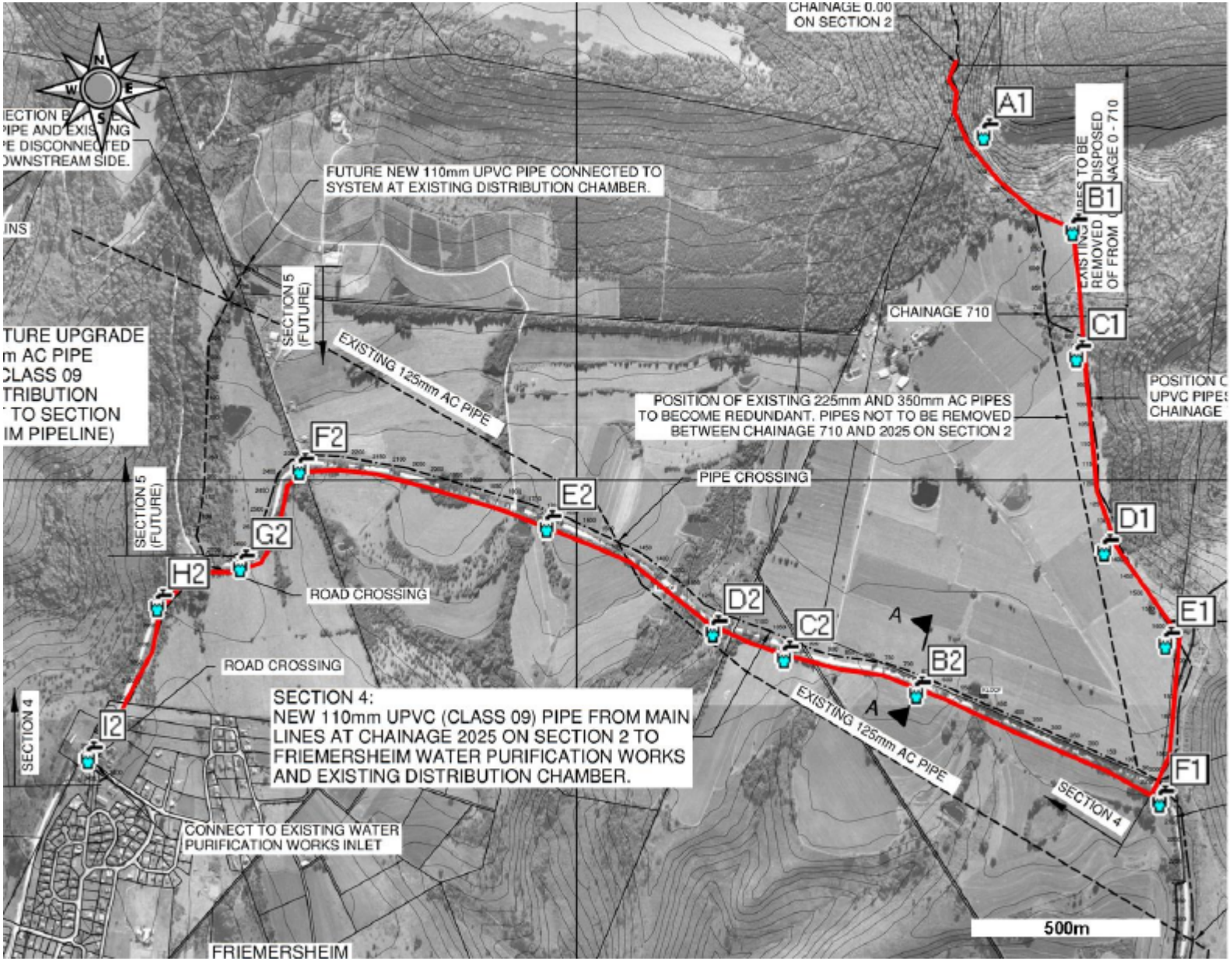

Figure 2. Enlarged area indicated in Figure 1 showing layout, specs, study area (red) and route points (Table 1). Courtesy MVD Cons. Engineers.

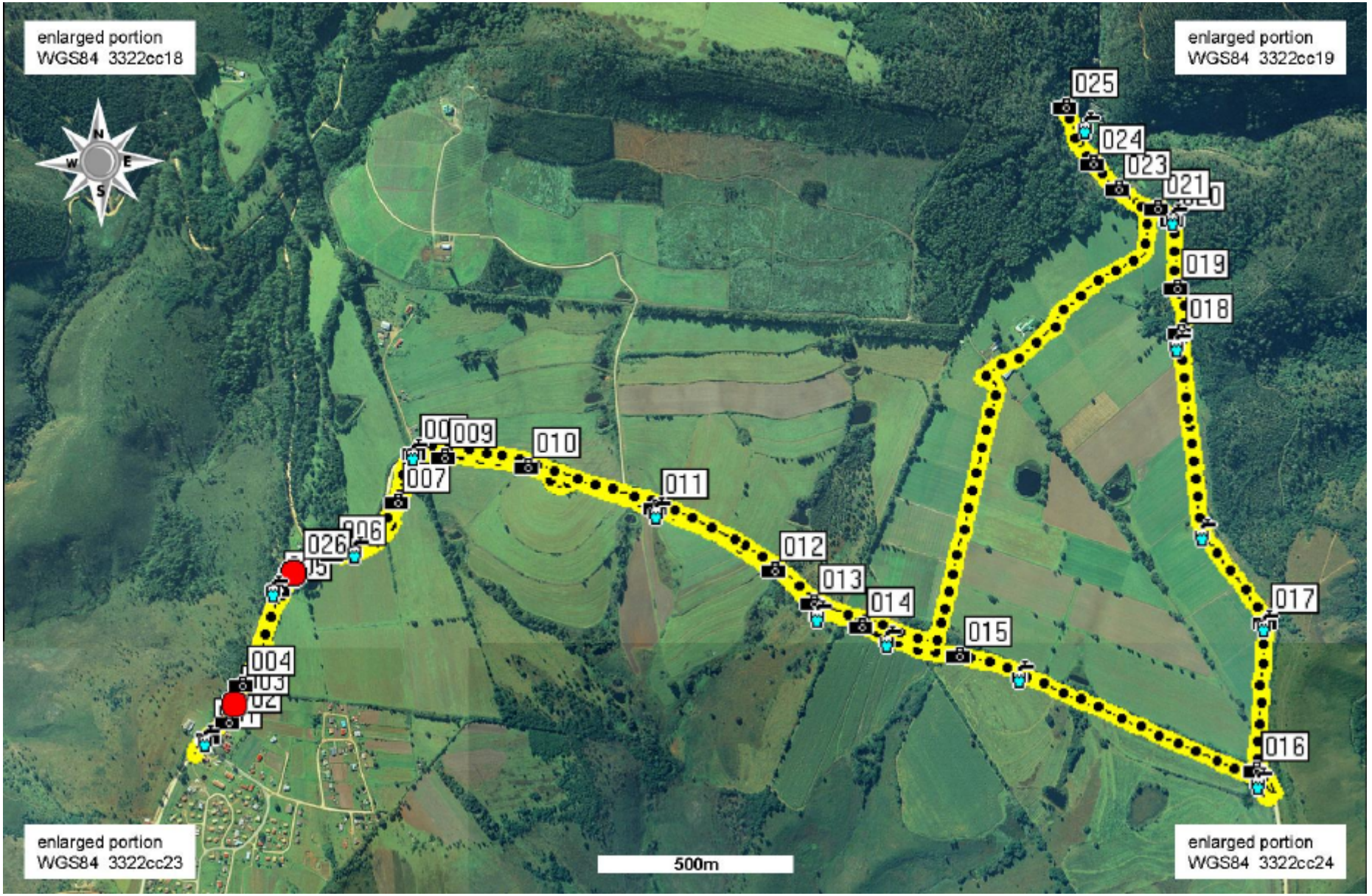

Figure 3. Enlarged area indicated in Fig. 1 with walk tracks (yellow), photo and observation points (red) (Tables 1 & 2). Courtesy Surveys & Mapping.

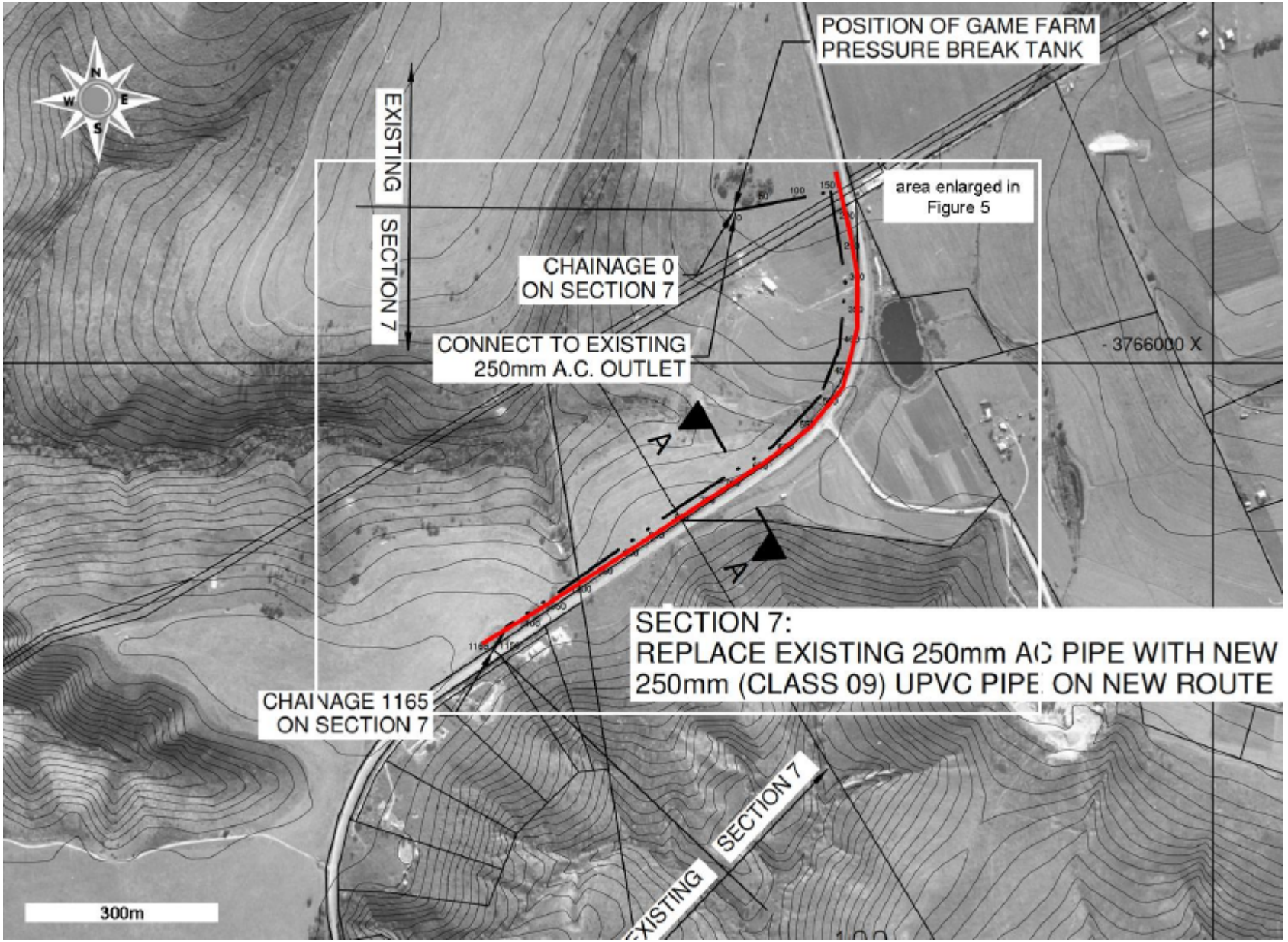

Figure 4. Enlarged area as indicated in Figure 1 showing layout, specs and study area (red). Courtesy MVD Consulting Engineers.

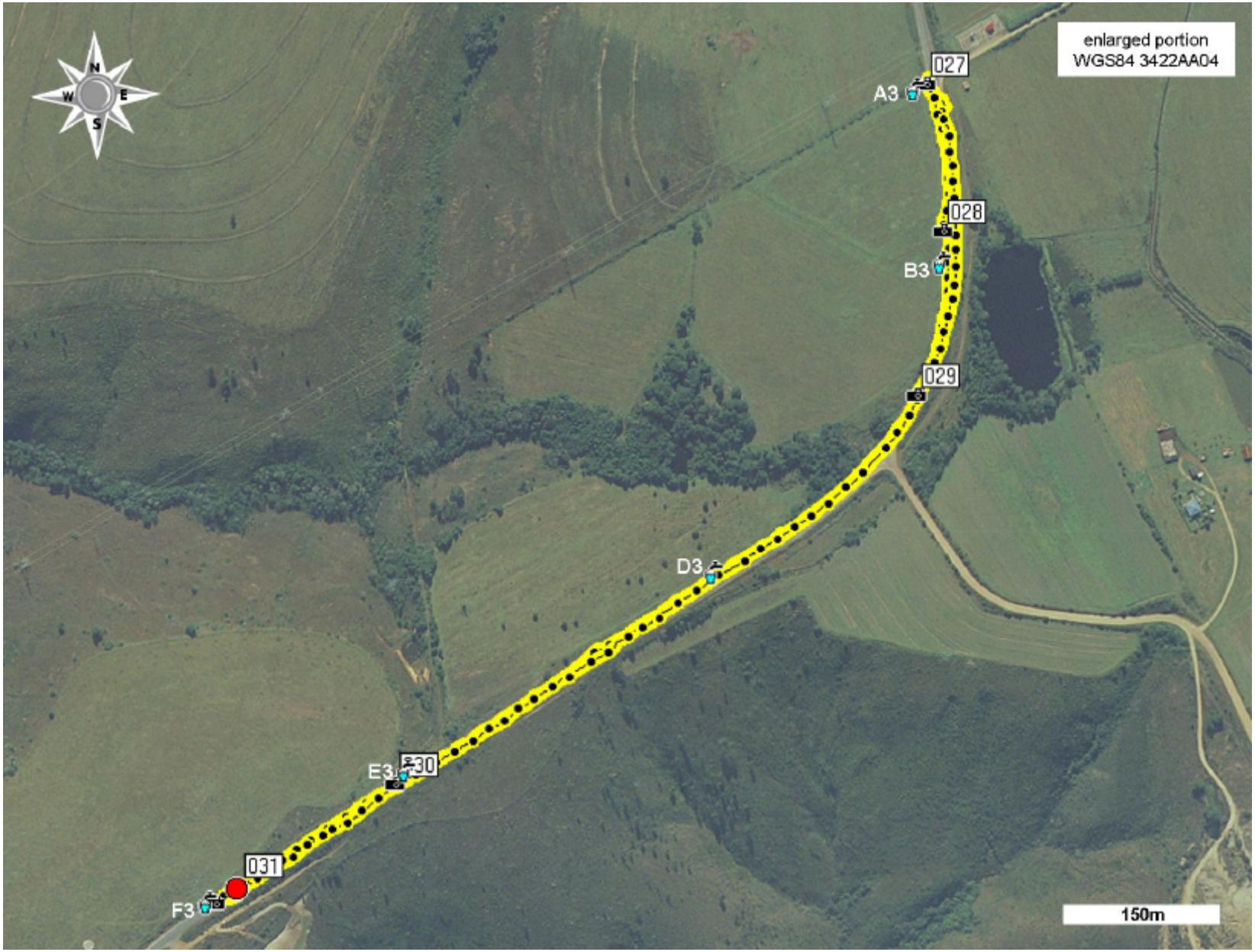

Figure 5. Enlarged area as indicated in Figure 4 with walk track (yellow), photo & observation points (red) and route points (Tables 1 & 2).

Plate 1. Examples of the surrounding environment, topography and vegetation cover. Old houses at Friemersheim.

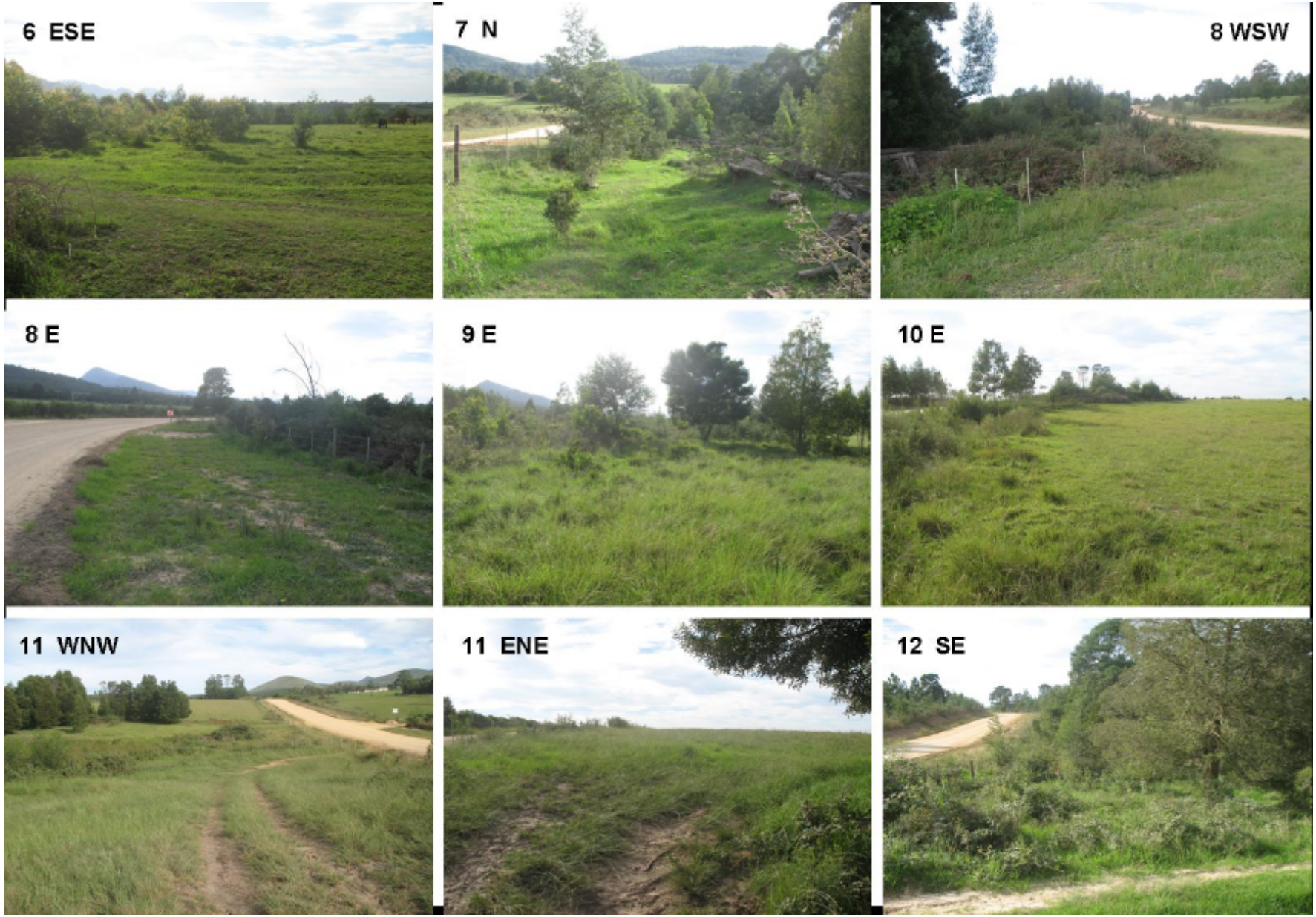

Plate 2. Examples of the surrounding environment, topography and vegetation cover.

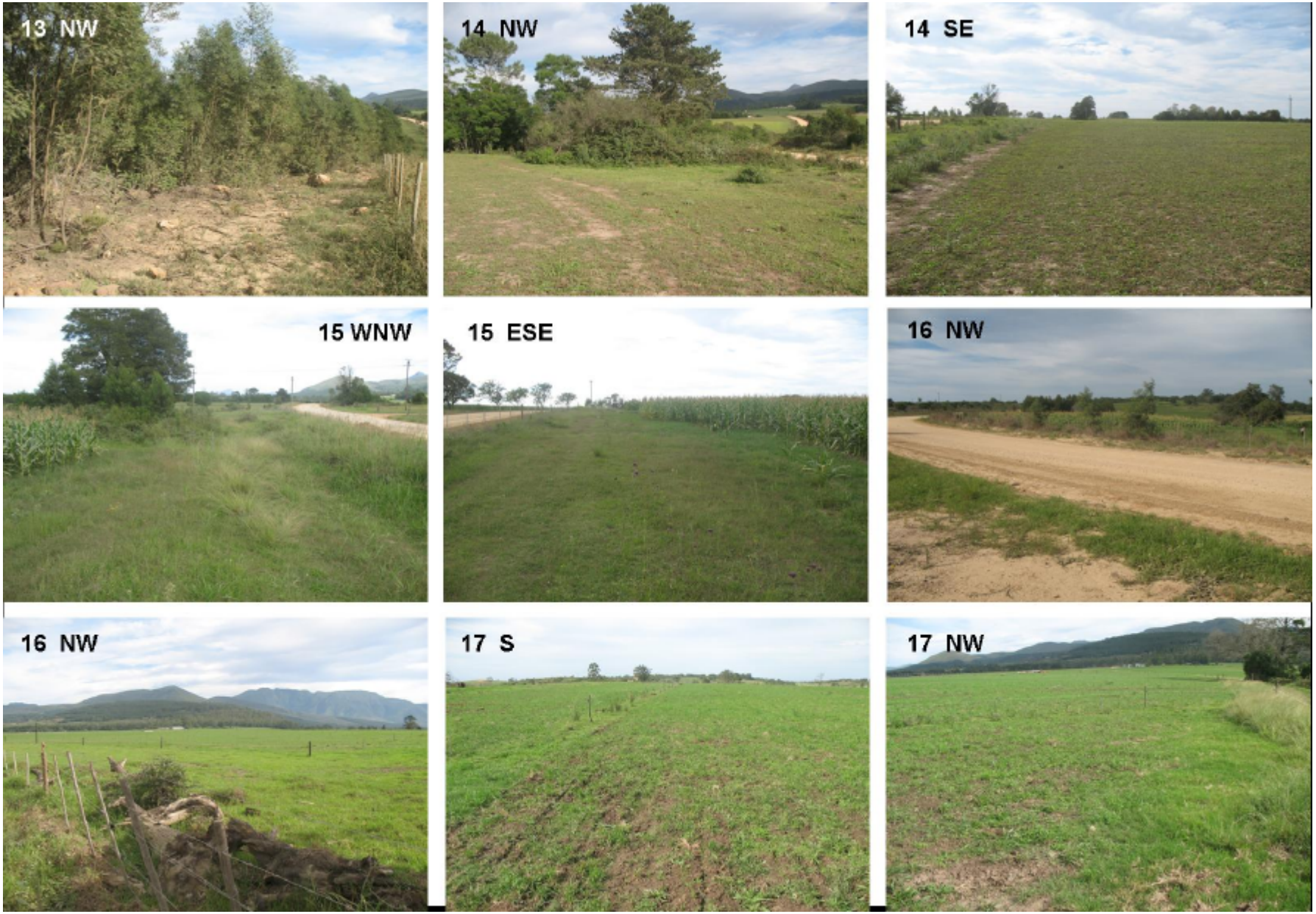

Plate 2. Examples of the surrounding environment, topography and vegetation cover.

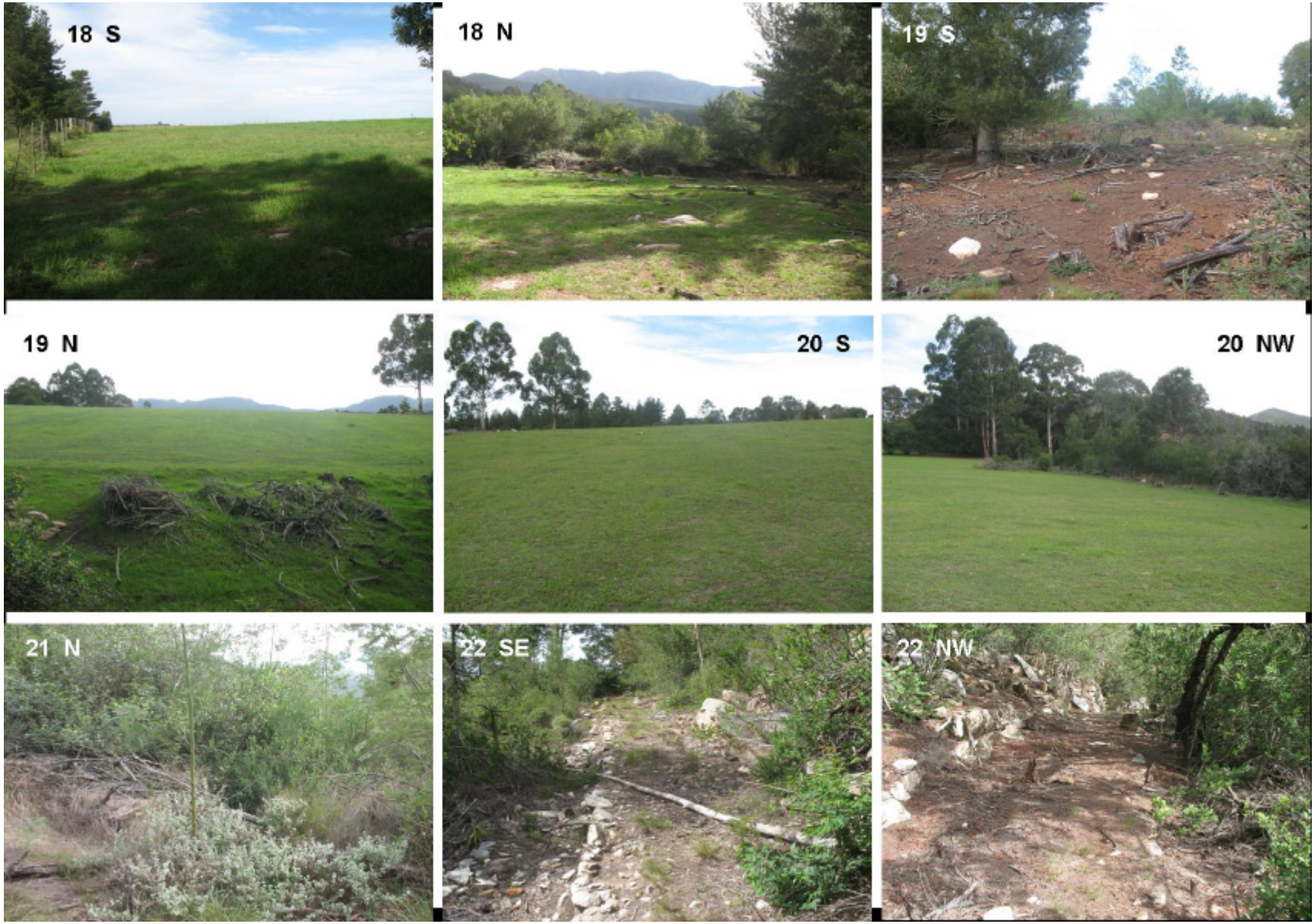

Plate 4. Examples of the surrounding environment, topography and vegetation cover. Existing pipeline – bottom right images.

Plate 5 Surrounding environment, topography and vegetation cover. Existing pipeline – top imges. Cemetery – bottom images.

Plate 6. Waypoint 26 – cemetery. Examples of the surrounding environment, topography and vegetation cover.