APPENDIX A: MAPS AND COORDINATES

1. COORDINATES OF THE PROPOSED 132KV OVERHEAD DISTRIBUTION LINES FOR BRANDVALLEY WIND ENERGY FACILITY AND SUBSTATION POSITIONS

A. COORDINATES OF 33/132kV SUBSTATION POSITIONS

Table A: Coordinates of the proposed onsite 33/132kV substations

Alternative	**Latitude**	**Longitude**
Alternative 3		
Centre point	-32.97011	20.42897
Corner point 1	-32.97028	20.42785
Corner point 2	-32.96918	20.42878
Corner point 3	-32.96996	20.43008
Corner point 4	-32.97106	20.42916
Alternative 4 **(preferred alternative)**		
Centre point	-32.97671	20.43995
Corner point 1	-32.97688	20.43883
Corner point 2	-32.97577	20.43974
Corner point 3	-32.97654	20.44106
Corner point 4	-32.97765	20.44015
Central hub substation		
Centre point	-32.98874	20.48932
Corner point 1	-32.98784	20.48823
Corner point 2	-32.98783	20.49037
Corner point 3	-32.98963	20.49039
Corner point 4	-32.98965	20.48825

B. COORDINATES OF OVERHEAD 132KV DISTRIBUTION LINES

Table B: Connection to Bon Espirange Substation

200m corridor from substation 3 to Bon Espirange substation Alternative 3A 12.163km in length	**Latitude**	**Longitude**
Start	-32.97041	20.42916
Bend point 1	-32.96919	20.44787
Bend point 2	-32.95895	20.48014
Bend point 3	-32.95701	20.49210
Centre	-32.95525	20.49288
Bend point 4	-32.94704	20.49652
Bend point 5	-32.94667	20.49874
Bend point 6	-32.94654	20.49890
Bend point 7	-32.94605	20.49879
Bend point 8	-32.94592	20.49895
Bend point 9	-32.94348	20.51344
End	-32.92001	20.53372
200m corridor from substation 4 to Bon Espirange substation Alternative 4A Preferred 11.586km in length	**Latitude**	**Longitude**
Start	-32.97671	20.43995
Bend point 1	-32.97275	20.44227
Bend point 2	-32.96820	20.45677
Bend point 3	-32.96522	20.46061
Bend point 4	-32.95895	20.48014
Bend point 5	-32.95701	20.49210
Centre	-32.95395	20.49351
Bend point 6	-32.94704	20.49652
Bend point 7	-32.94667	20.49874
Bend point 8	-32.94654	20.49890
Bend point 9	-32.94605	20.49879
Bend point 10	-32.94592	20.49895
Bend point 11	-32.94348	20.51344
End	-32.92001	20.53372

Table C: Connection to Komsberg Substation

200m corridor from substation 3 to Komsberg substation Alternative 3B 16.507km in length	**Latitude**	**Longitude**
Start	-32.97024	20.42923
Bend point 1	-32.96933	20.45257
Bend point 2	-32.96030	20.48066
Centre	-32.95474	20.51490
Bend point 3	-32.94855	20.55279
Bend point 4	-32.93681	20.58977
Bend point 5	-32.93645	20.59657
End	-32.93331	20.59453

200m corridor from substation 4 to Komsberg substation **Alternative 4B** **15.815km in length**	**Latitude**	**Longitude**
Start	-32.97682	20.44001
Bend point 1	-32.97257	20.44249
Bend point 2	-32.96933	20.45257
Bend point 3	-32.96030	20.48066
Centre	-32.95409	20.51879
Bend point 4	-32.94855	20.55279
Bend point 5	-32.93681	20.58977
Bend point 6	-32.93645	20.59657
End	-32.93331	20.59453

Table D: Connection via central hub substation

200m corridor from substation 3 and 4 via Central Hub substation to Bon Espirange substation or Komsberg substation	**Latitude**	**Longitude**
Alternative 3C **6.243km in length**		
Start	-32.97042	20.42948
Bend point 1	-32.97256	20.43803
Middle	-32.98374	20.45858
Bend point 2	-32.98412	20.45943
Bend point 3	-32.98340	20.47731
Bend point 4	-32.98628	20.48558
Bend point 5	-32.98741	20.48930
End at Central hub substation	-32.98866	20.48937
Alternative CH1a **5,785km in length**		
Start at Central hub substation	-32.98883	20.48915
Bend point 1	-32.98827	20.48784
Bend point 2	-32.98603	20.48784
Middle	-32.96721	20.49989
Bend point 3	-32.95593	20.50724
End	-32.95322	20.52403
Alternative CH2a **4.864km in length**		
Start	-32.95322	20.52403
Bend point 1	-32.94662	20.52600
Middle	-32.93442	20.52640
Bend point 2	-32.92903	20.52667
End at Bon Espirange	-32.92903	20.52667
Alternative 4C **4.972km in length**		
Start	-32.97671	20.43988
Bend point 1	-32.98412	20.45943
Middle	-32.98509	20.46451
Bend point 2	-32.98705	20.47528
Bend point 3	-32.98631	20.48544
Bend point 4	-32.98742	20.48925
End at Central hub substation	-32.98865	20.48934
Alternative CH1B **5.904km in length**		
Start at Central hub substation	-32.98828	20.48912
Bend point 1	-32.98844	20.48796
Bend point 2	-32.98601	20.48794
Middle	-32.96965	20.50767
Bend point 3	-32.96559	20.51239
Bend point 4	-32.96497	20.51669
Bend point 5	-32.96178	20.52160
End	-32.95229	20.52973
Alternative CH2b **7.373km in length**		
Start	-32.95320	20.52406
Bend point 1	-32.94858	20.55272
Middle	-32.94579	20.56147
Bend point 2	-32.93682	20.58975
Bend point 3	-32.93642	20.59658
Bend point 4	-32.93565	20.59707
End at Komsberg	-32.93390	20.59639

1. LOCALITY MAP

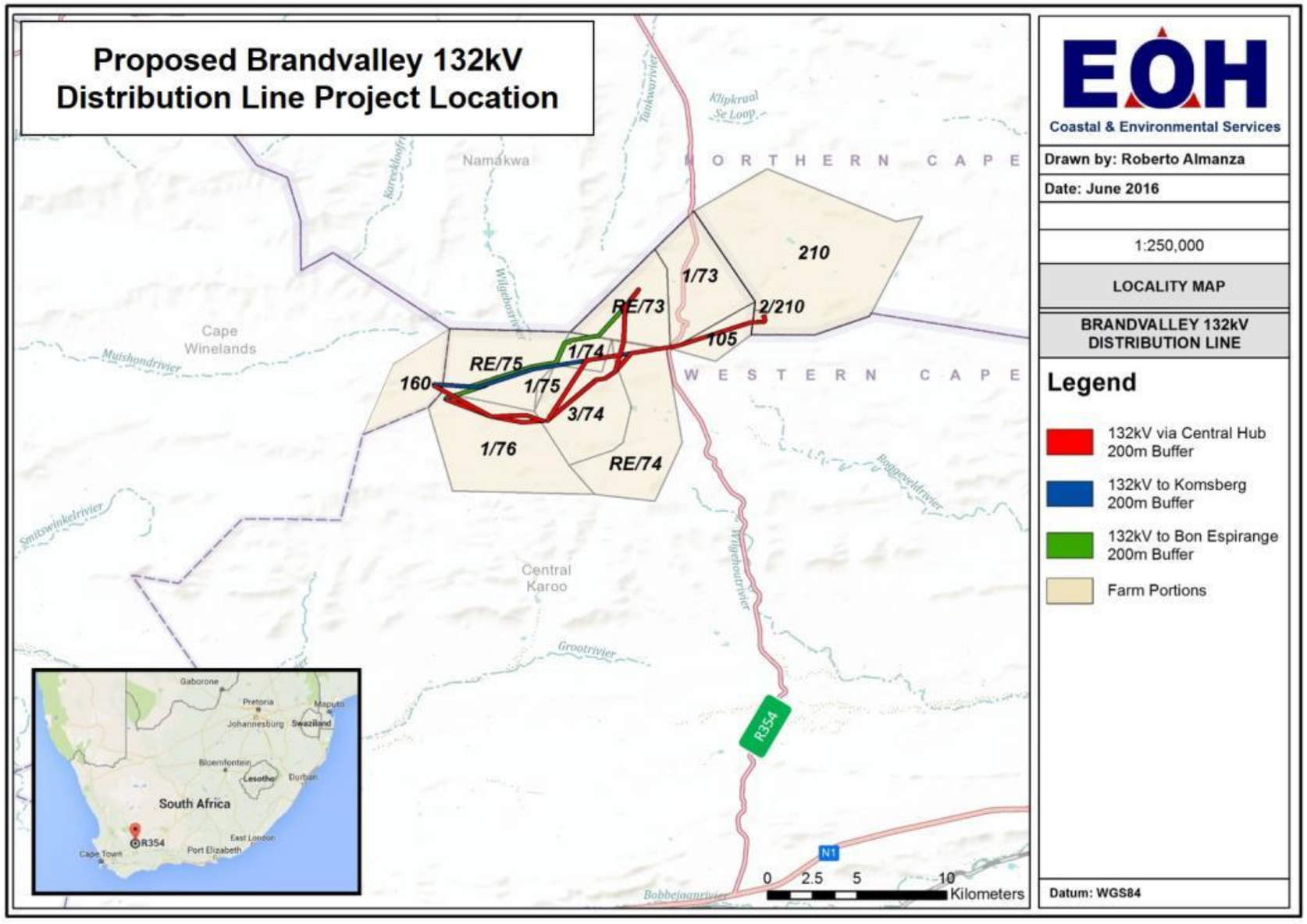

Figure 1: Project locality map, indicting the general location of the project study area, and the three substation alternatives. The property portions included in this application include all distribution lines and onsite substation alternatives.

2. INITIAL PRELIMINARY LAYOUT (INCLUDING ALL FOUR ONSITE SUBSTATION POSITIONS AND GRID CONNECTION OPTIONS AS ASSESSED BY SPECIALISTS)

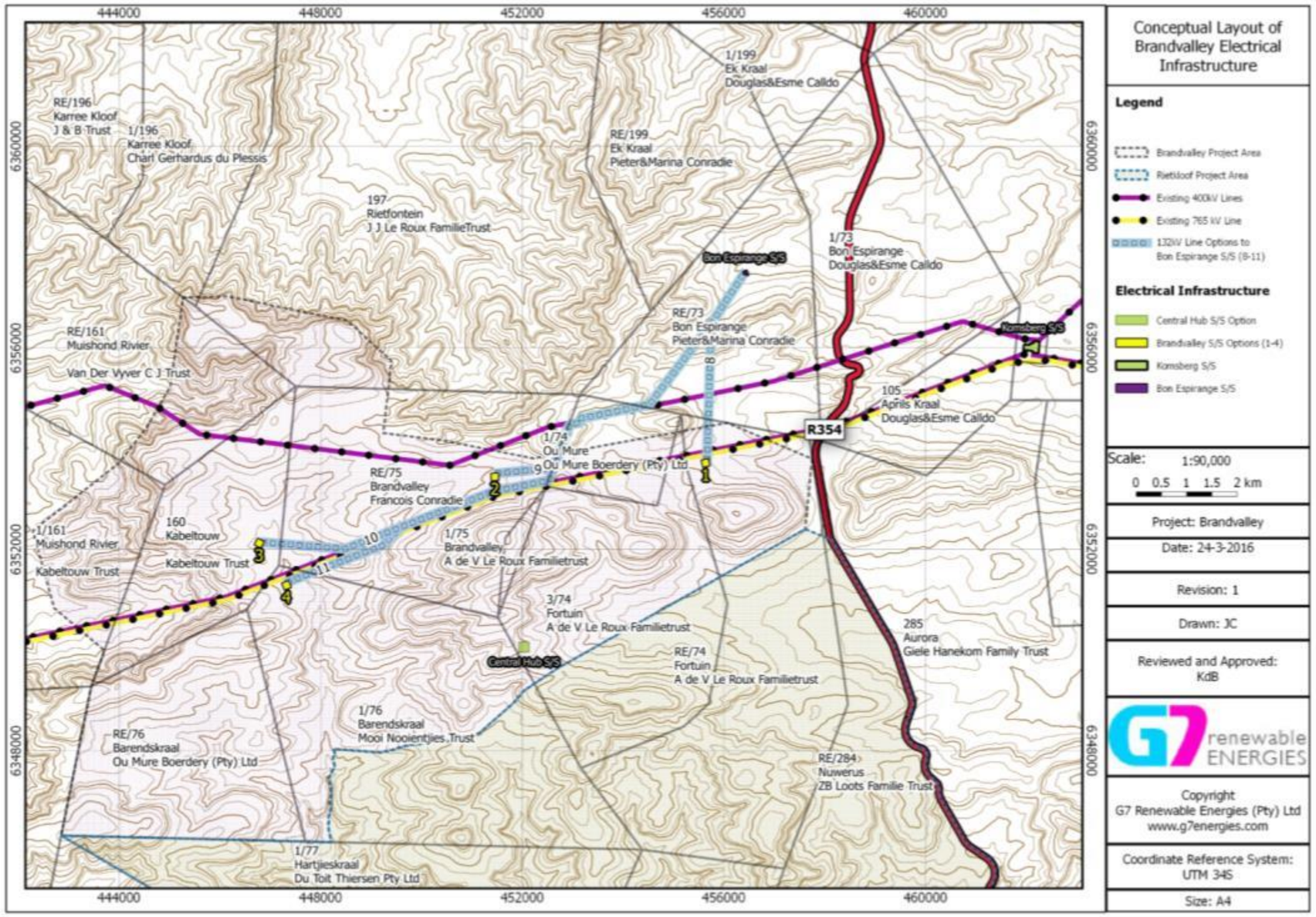

Figure 2: Preliminary layout proposed to connect to Bon Espirange Substation

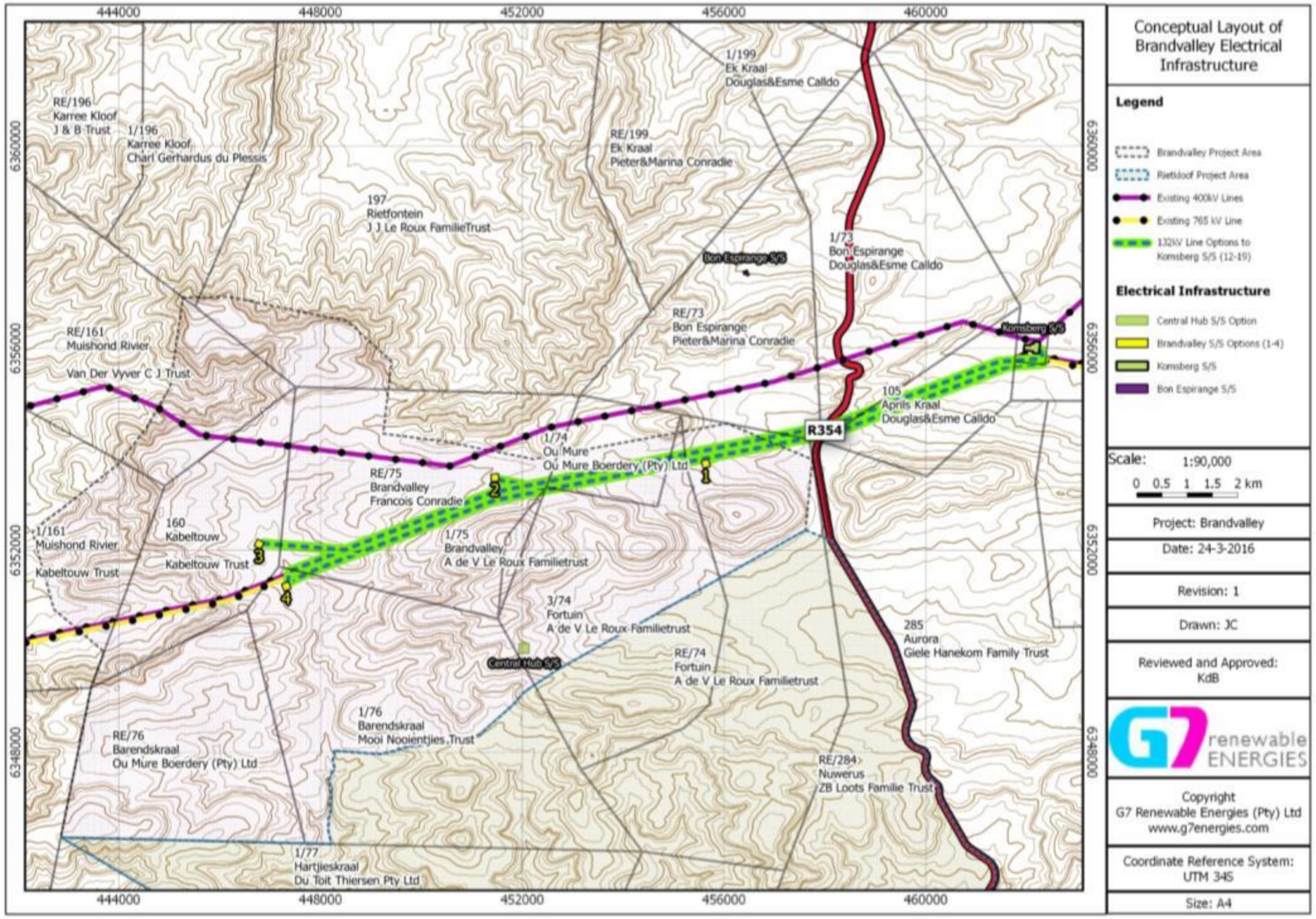

Figure 3: Preliminary layout proposed to connect to Komsberg Substation

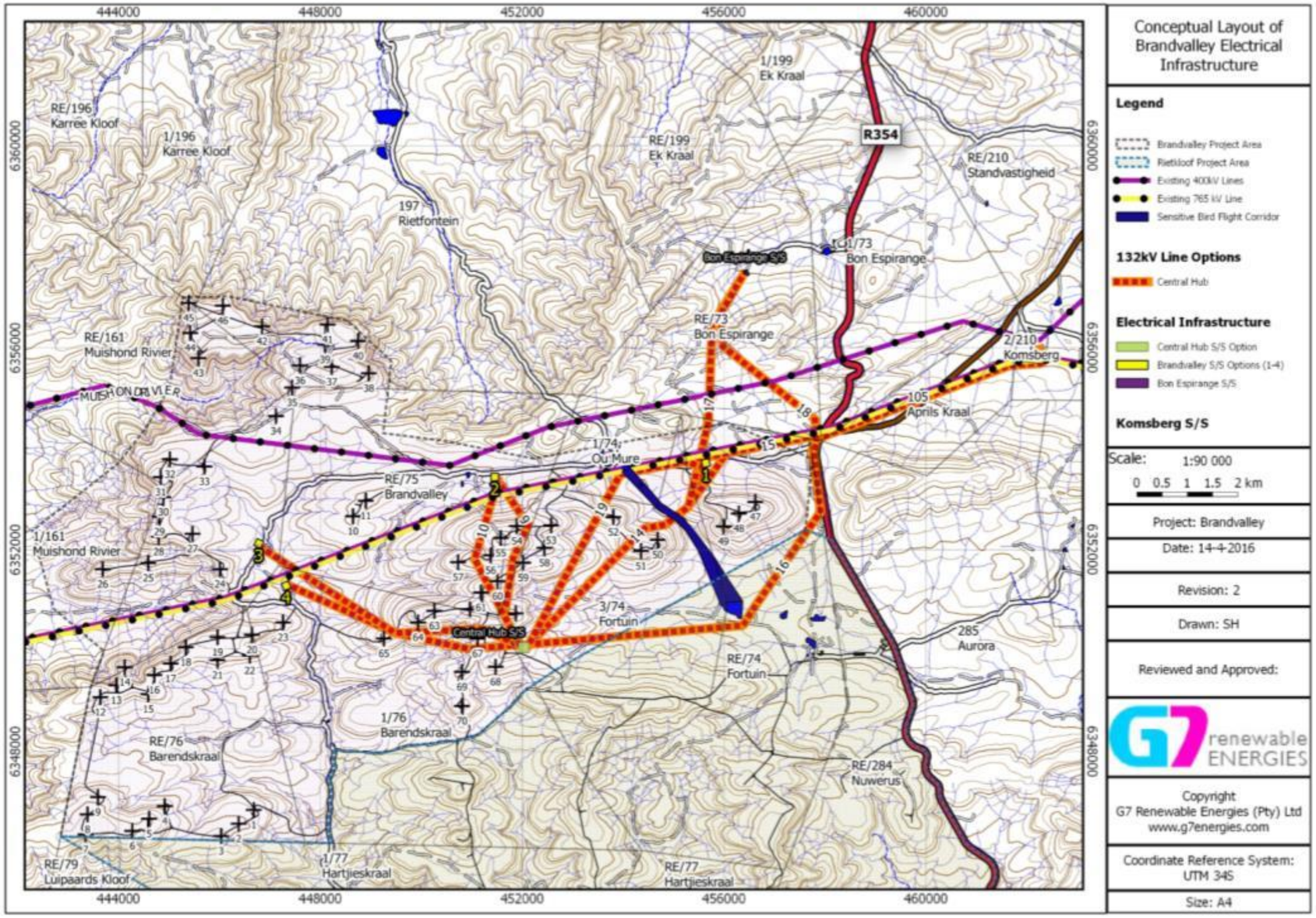

Figure 4: Preliminary layout proposed to connect to Bon Espirange or Komsberg Substation via the central hub substation

3. SCREENED LAYOUT ELIMINATING SUBSTATION POSITIONS 1 AND 2

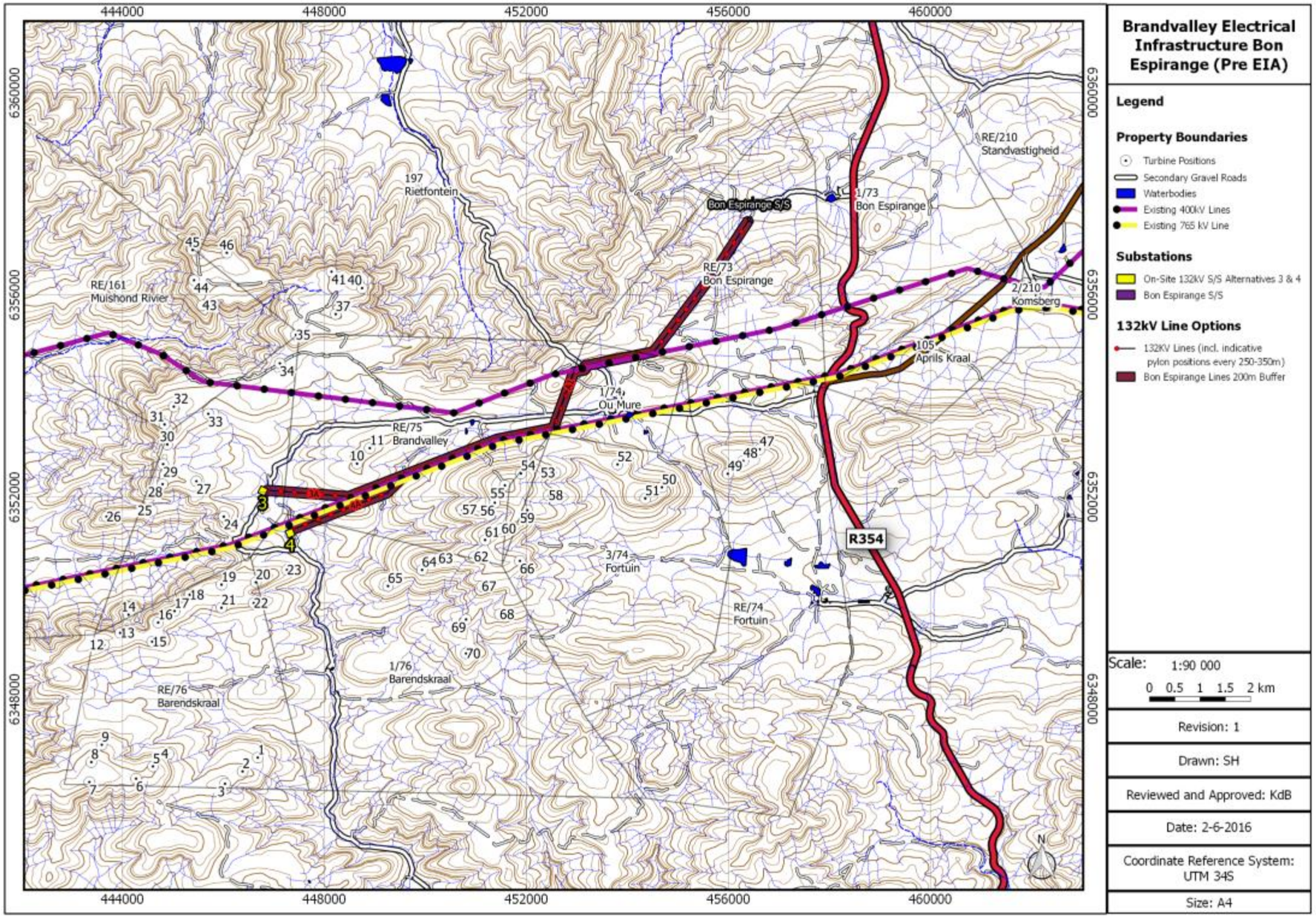

Figure 5: Proposed 132KV distribution line to connect to Bon Espirange Substation (pre-EIA)

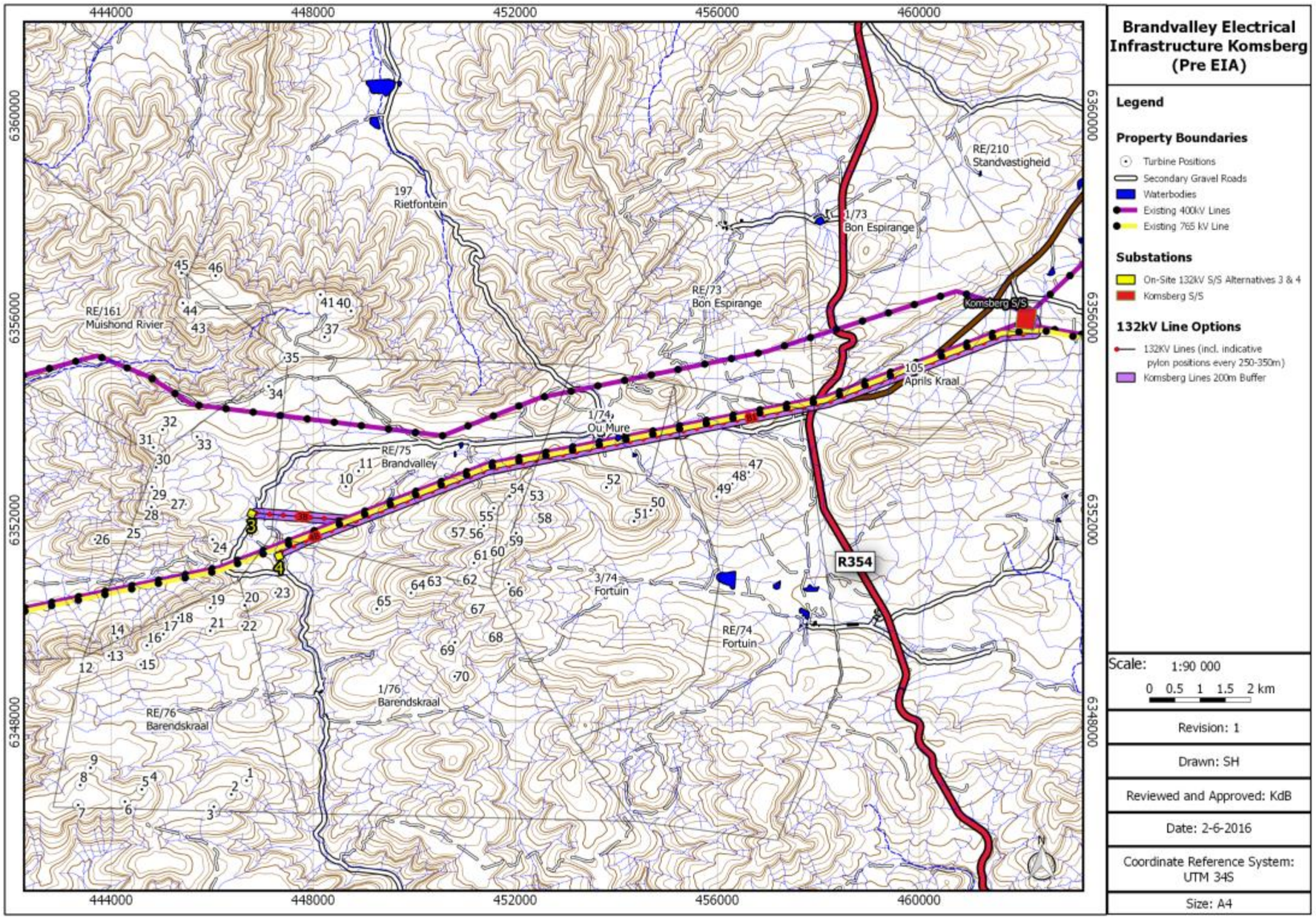

Figure 6: Proposed 132KV distribution line to connect to Komsberg Substation (pre-EIA)

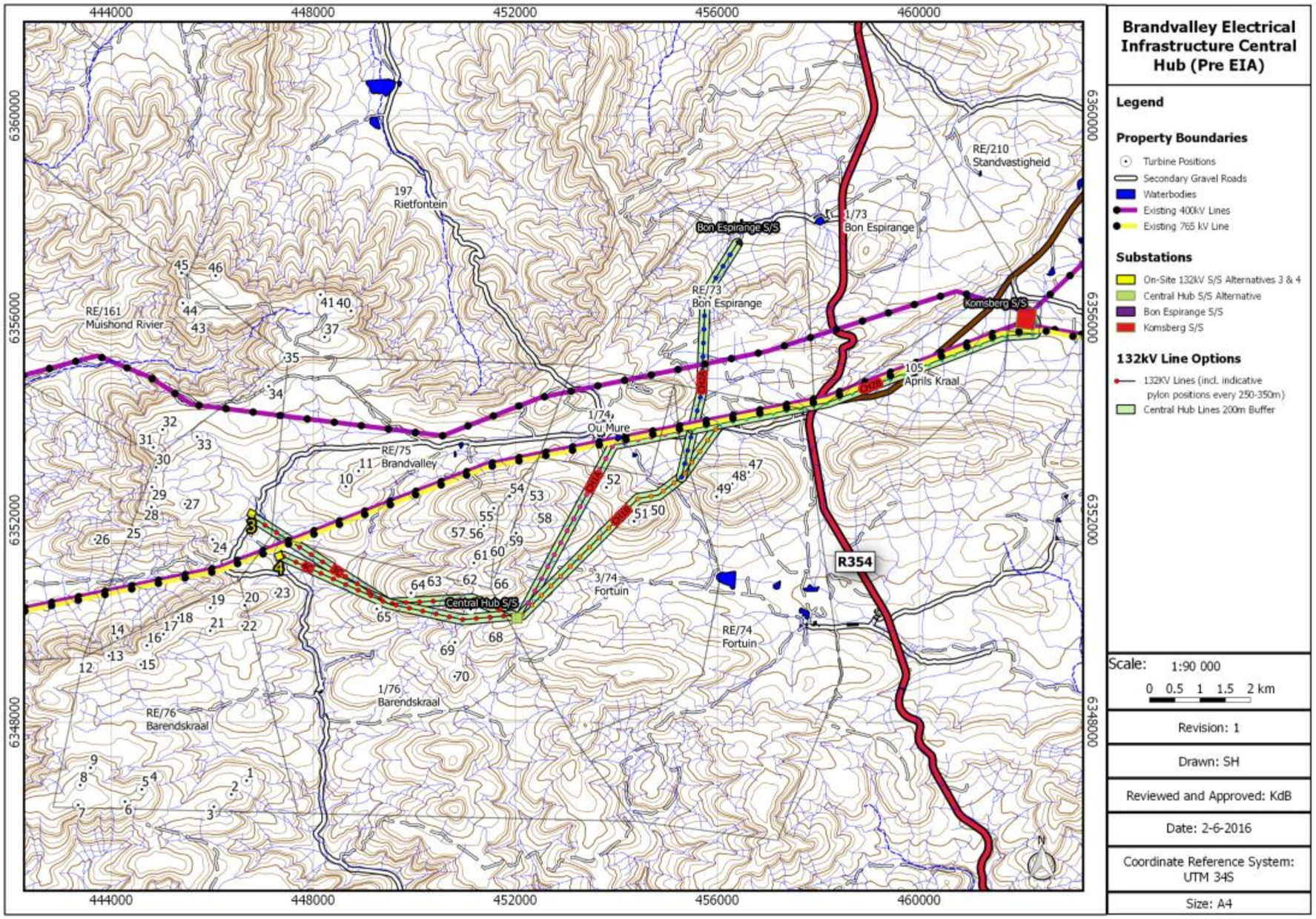

Figure 7: Proposed 132KV distribution line to connect to Bon Espirange or Komsberg Substation via the central hub substation (pre-EIA)

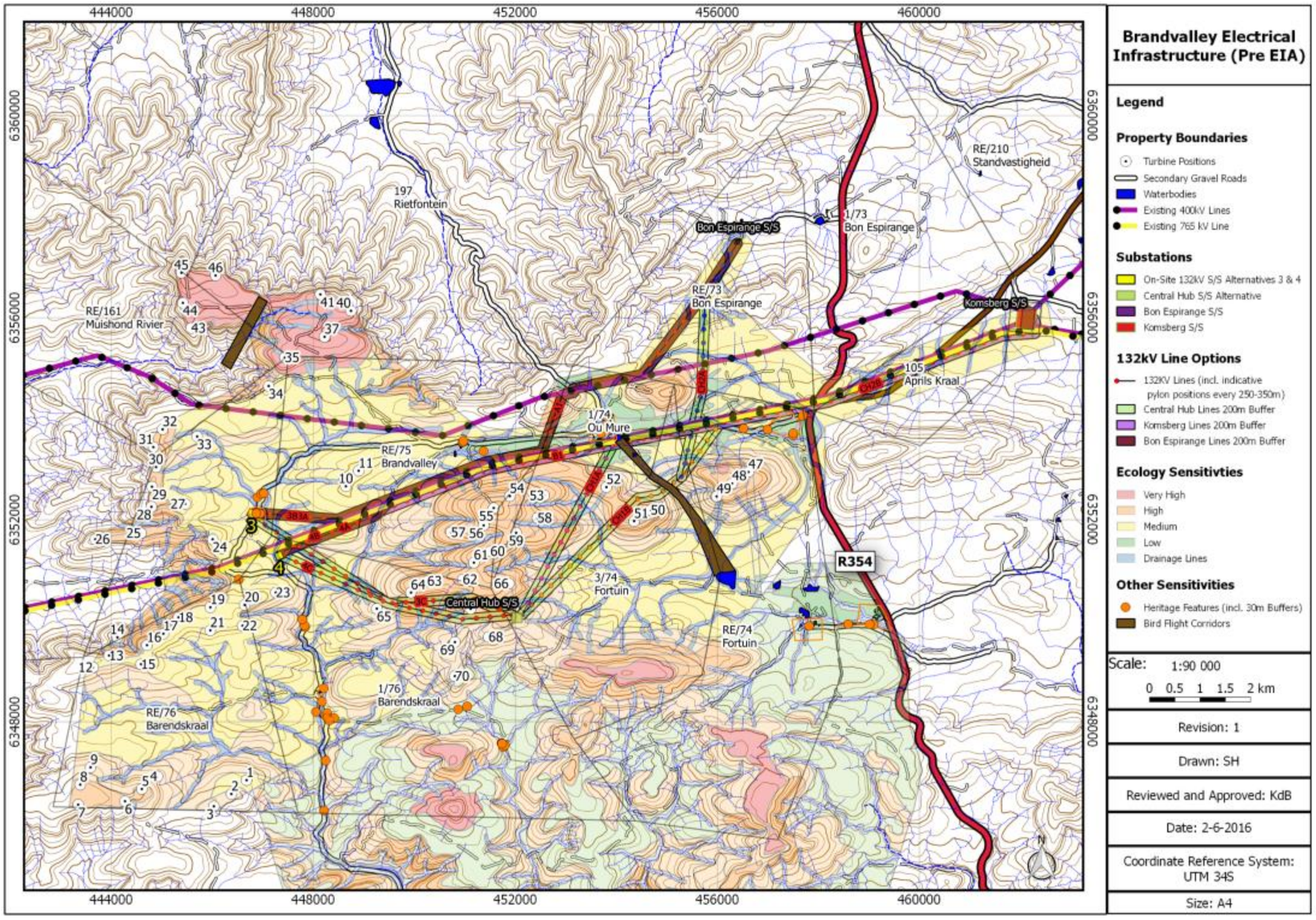

Figure 8: Proposed 132KV distribution line to connect to Komsberg Substation, Bon Espirange Substation and Central Hub Substation and environmental sensitivities (Pre-EIA layout)

4. POST EIA AMENDED LAYOUT TO AVOID SENSITIVE FEATURES

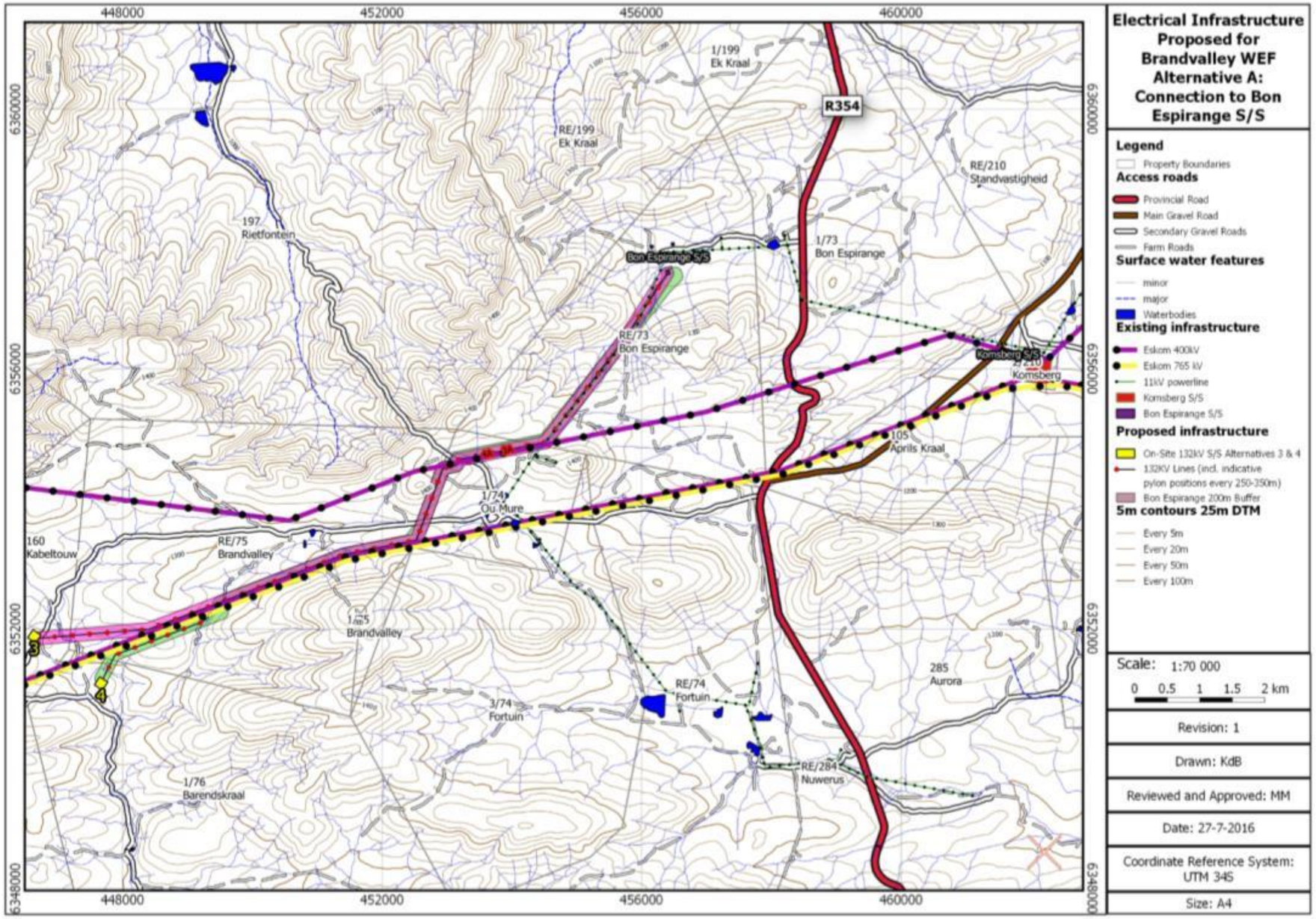

Figure 9: Proposed 132KV distribution line to connect to Bon Espirange Substation (Post-EIA layout)

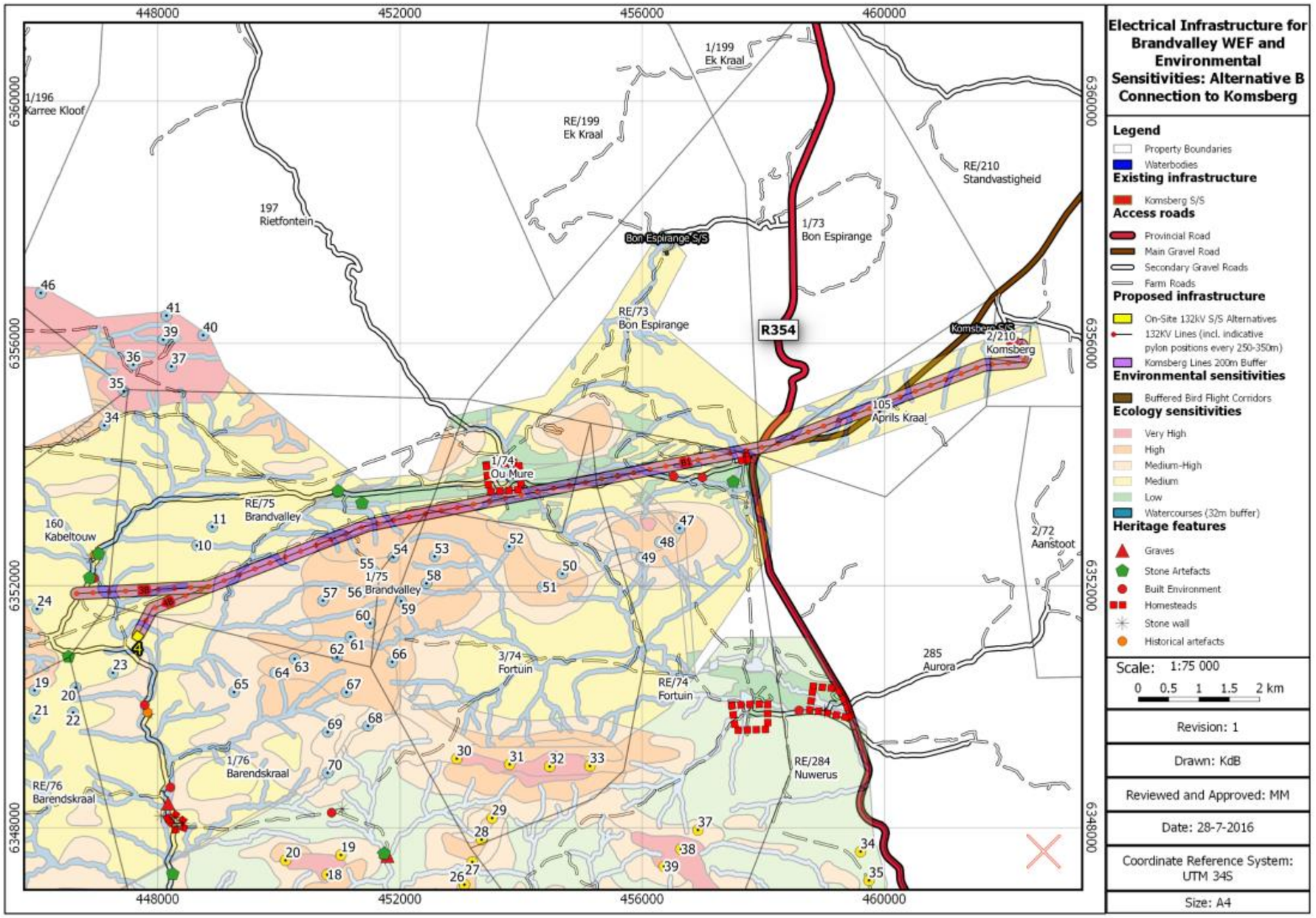

Figure 10: Proposed 132KV distribution line to connect to Komsberg Substation (Post-EIA layout) and environmental sensitivities

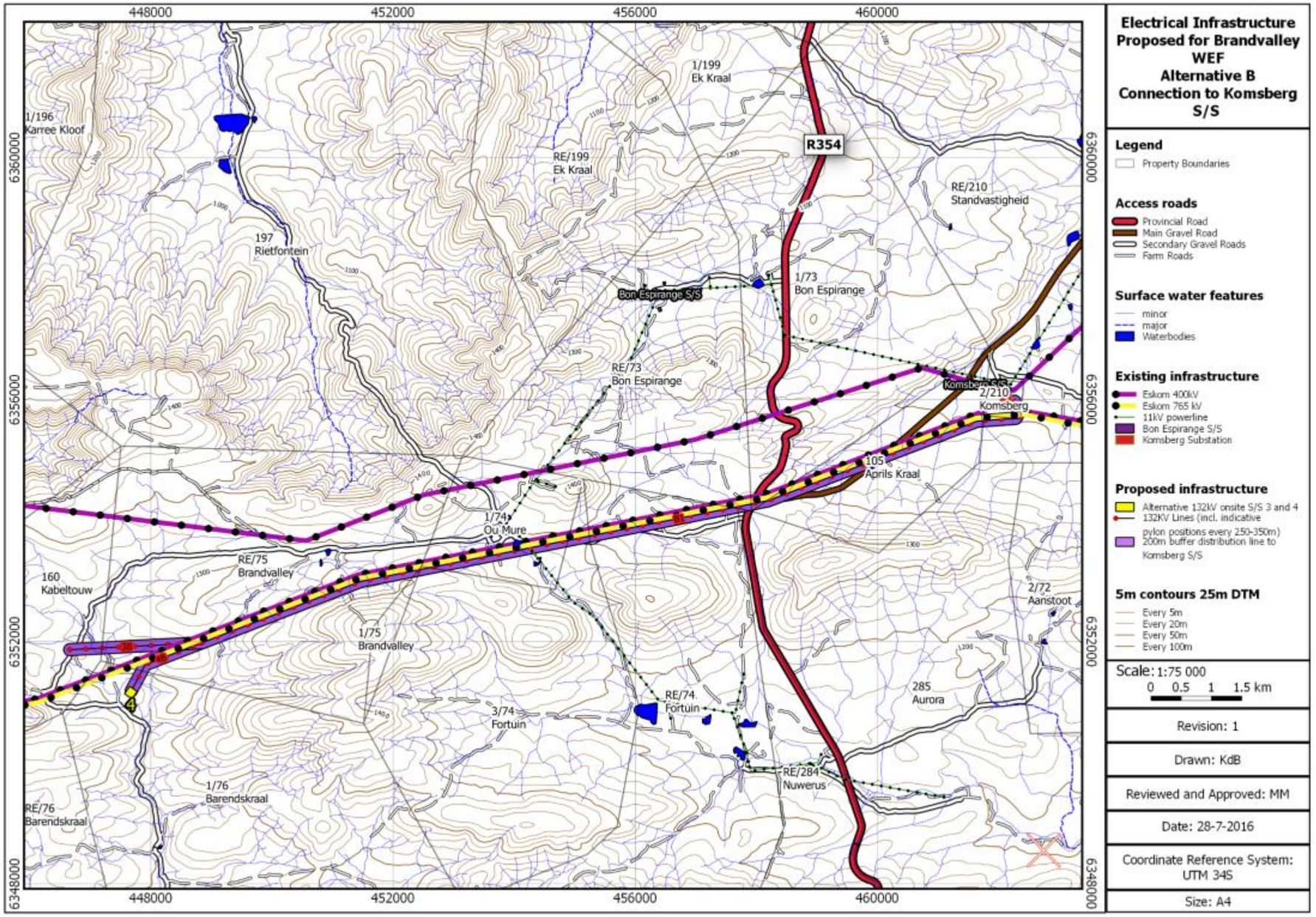

Figure 11: Proposed 132KV distribution line to connect to Komsberg Substation (Post-EIA layout) and environmental sensitivities

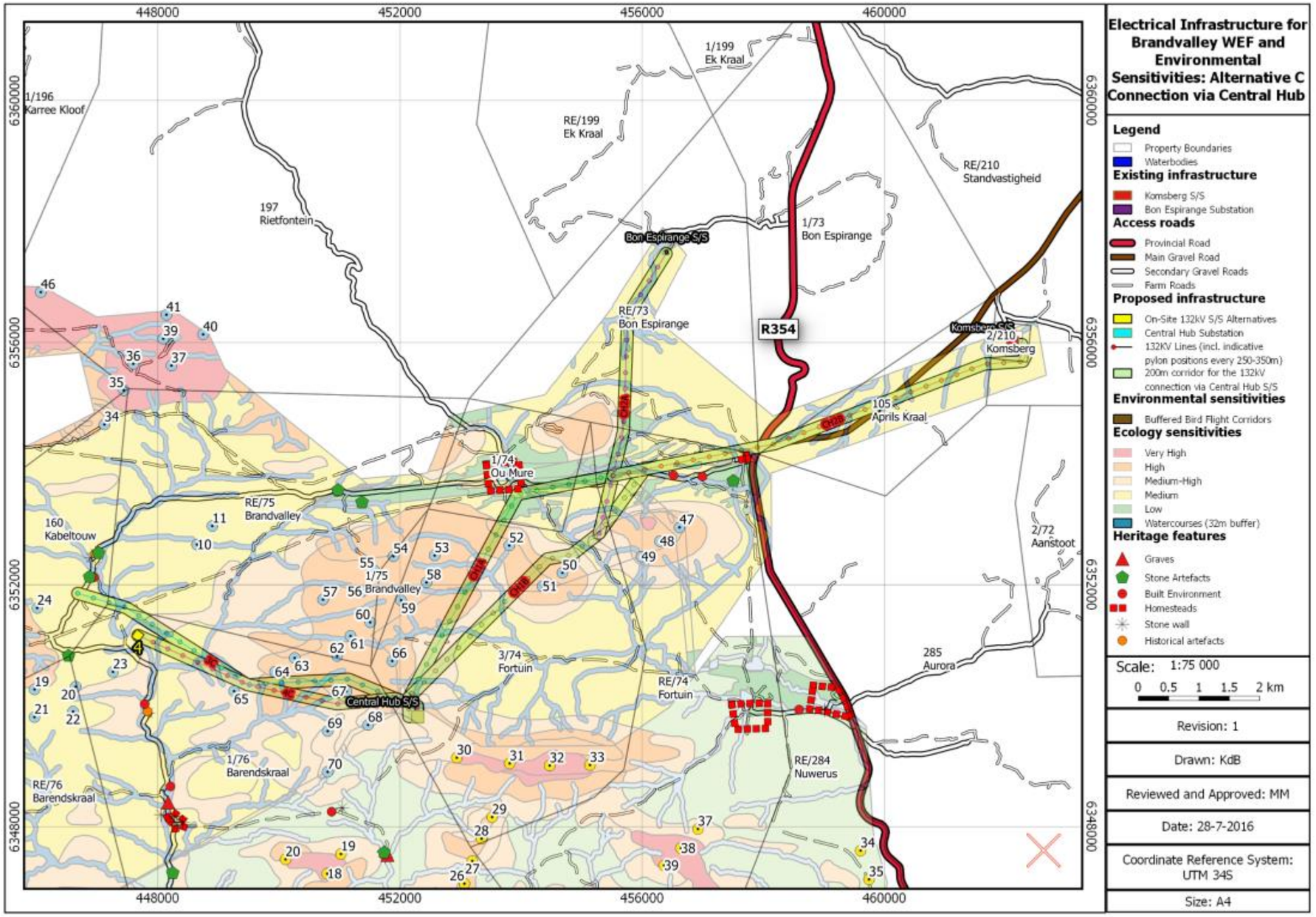

Figure 12: Proposed 132KV distribution line to connect to Komsberg Substation or Bon Espirange Substation via Central Hub Substation and environmental sensitivities (Post-EIA layout)

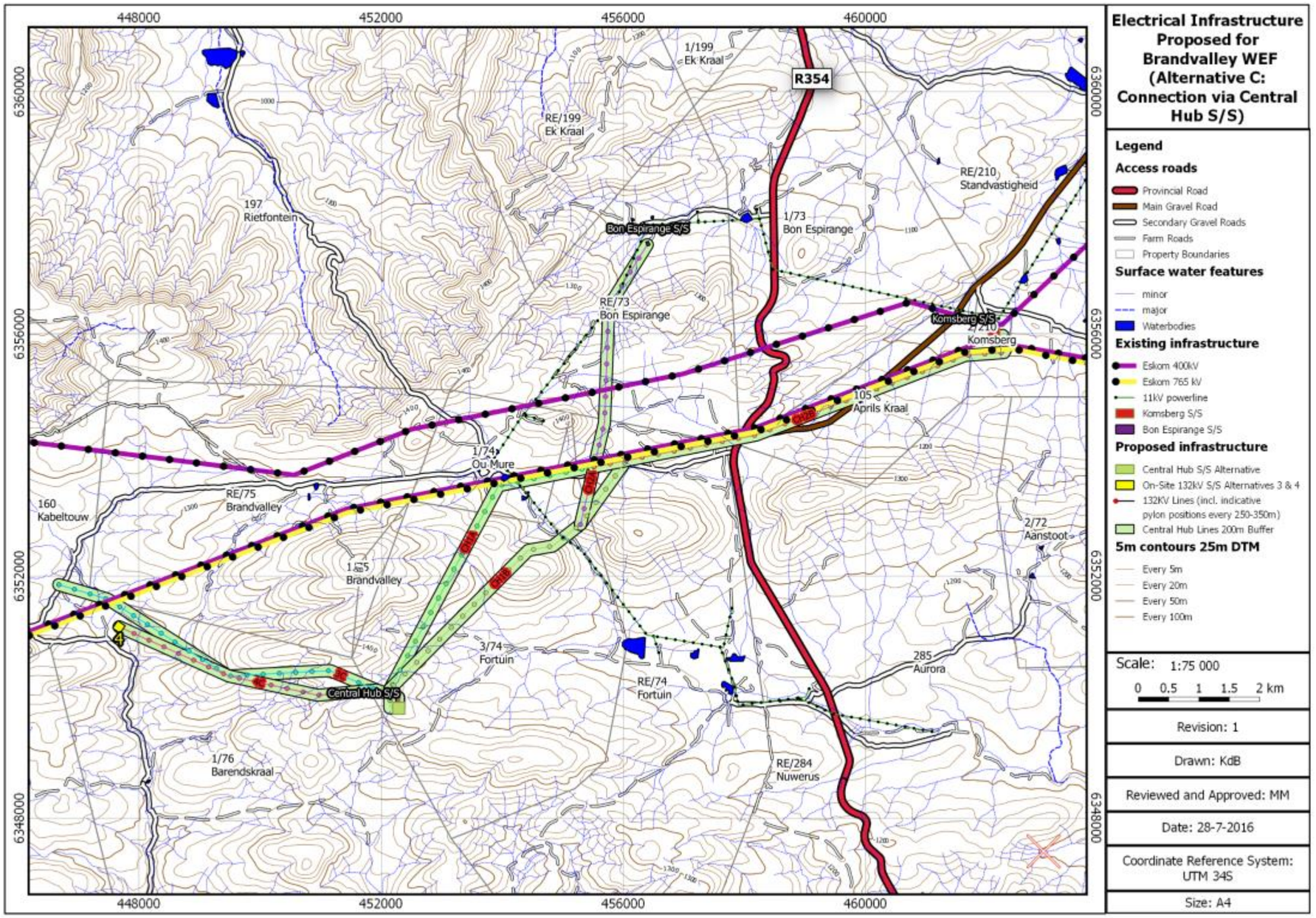

Figure 13: Proposed 132KV distribution line to connect to Komsberg Substation or Bon Espirange Substation via Central Hub Substation (Post-EIA layout)

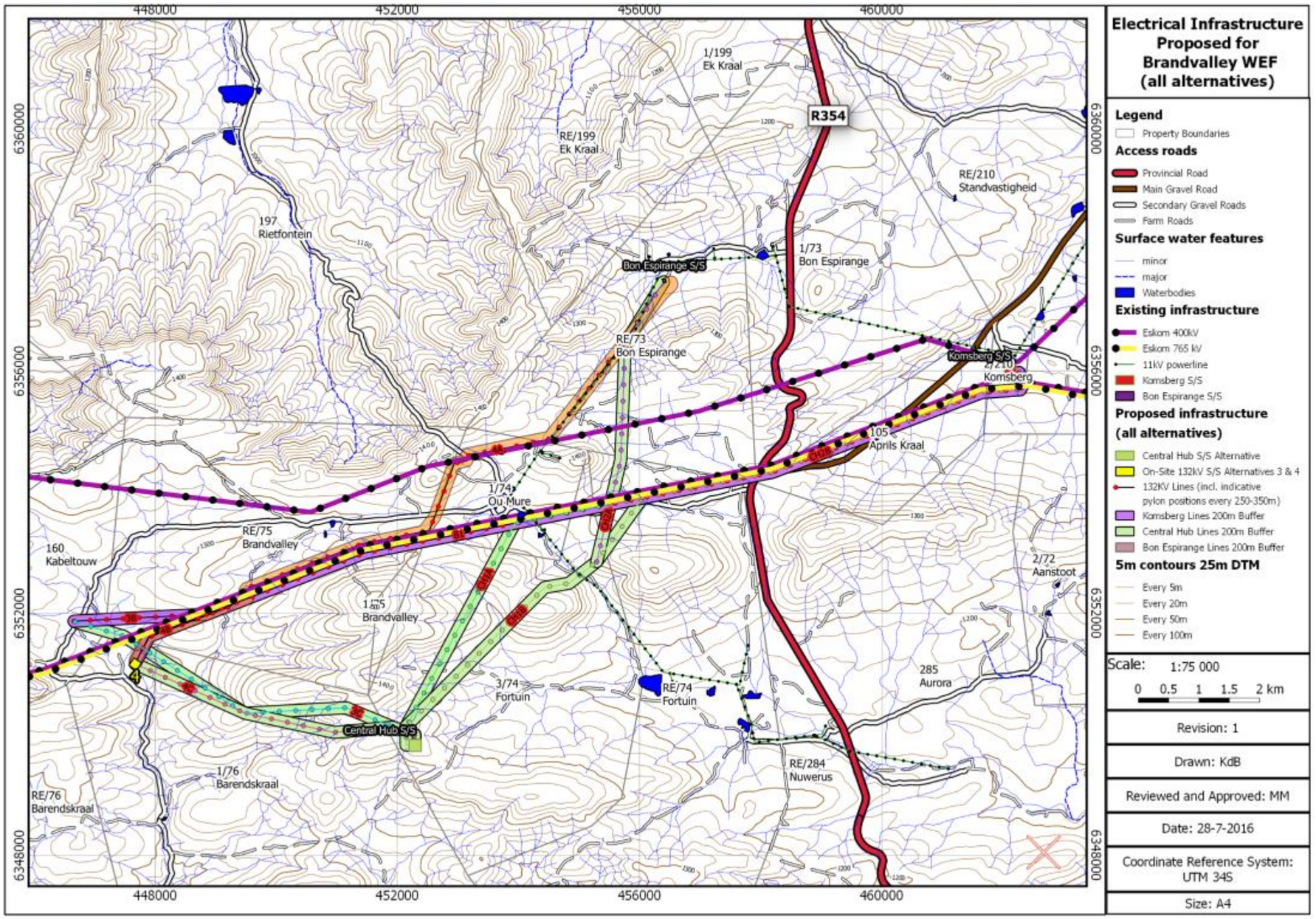

Figure 14: Proposed 132KV distribution line to connect to Komsberg Substation, Bon Espirange Substation or Central Hub Substation (Post-EIA layout)

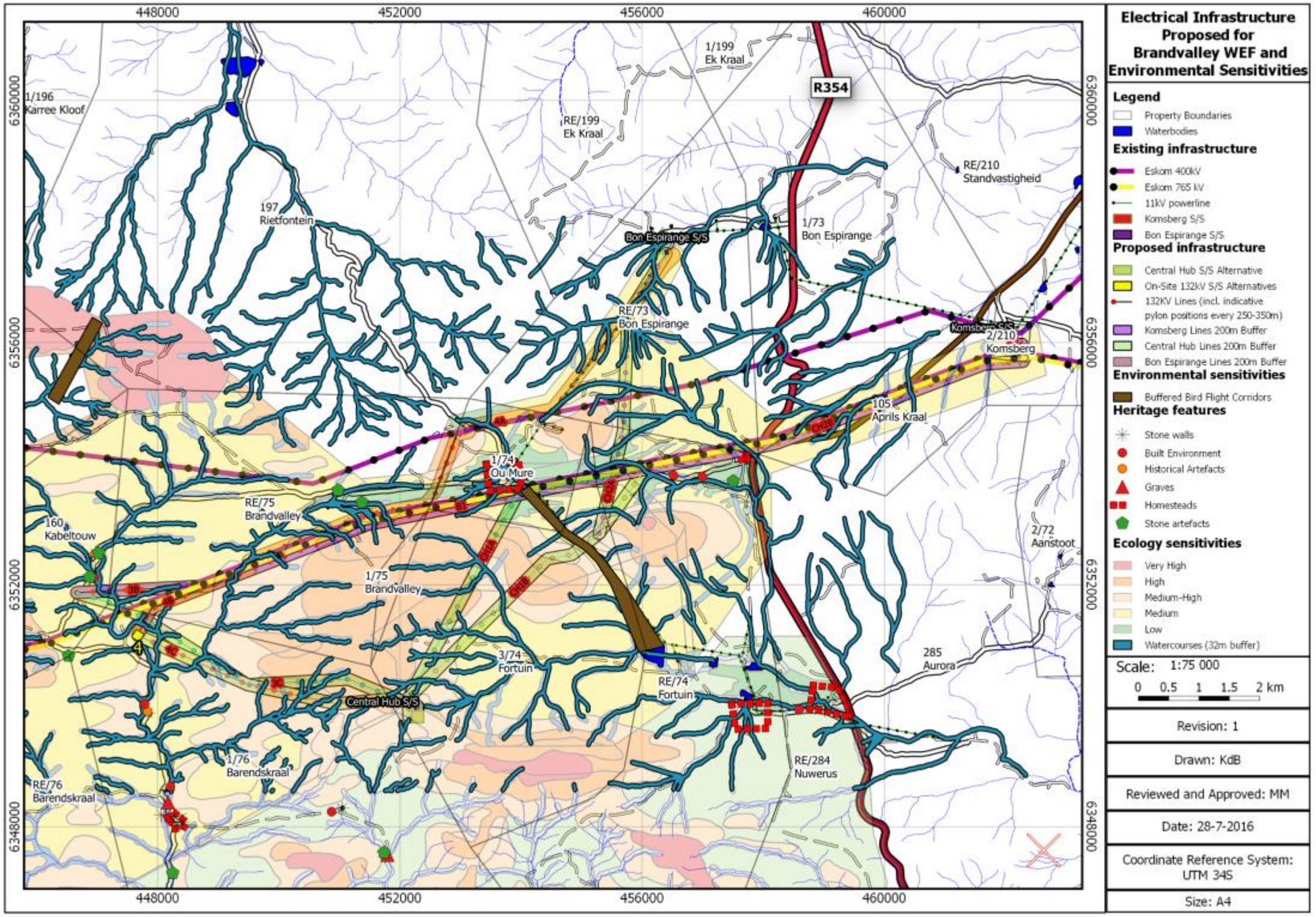

Figure 15: Proposed 132KV distribution line to connect to Komsberg Substation, Bon Espirange Substation or Central Hub Substation and environmental sensitivities (Post-EIA layout)

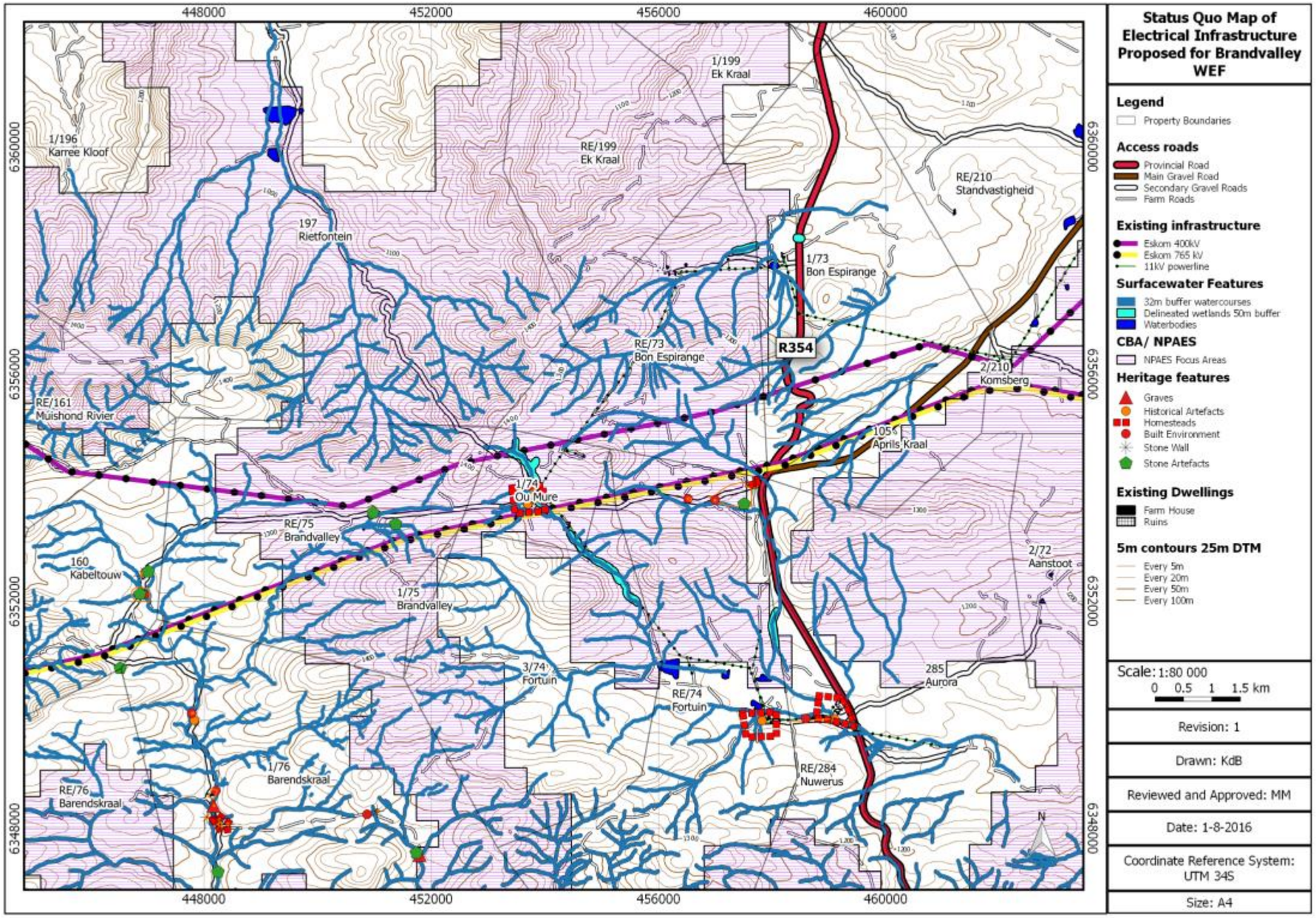

Figure 16: Status Quo Map / Regional Map

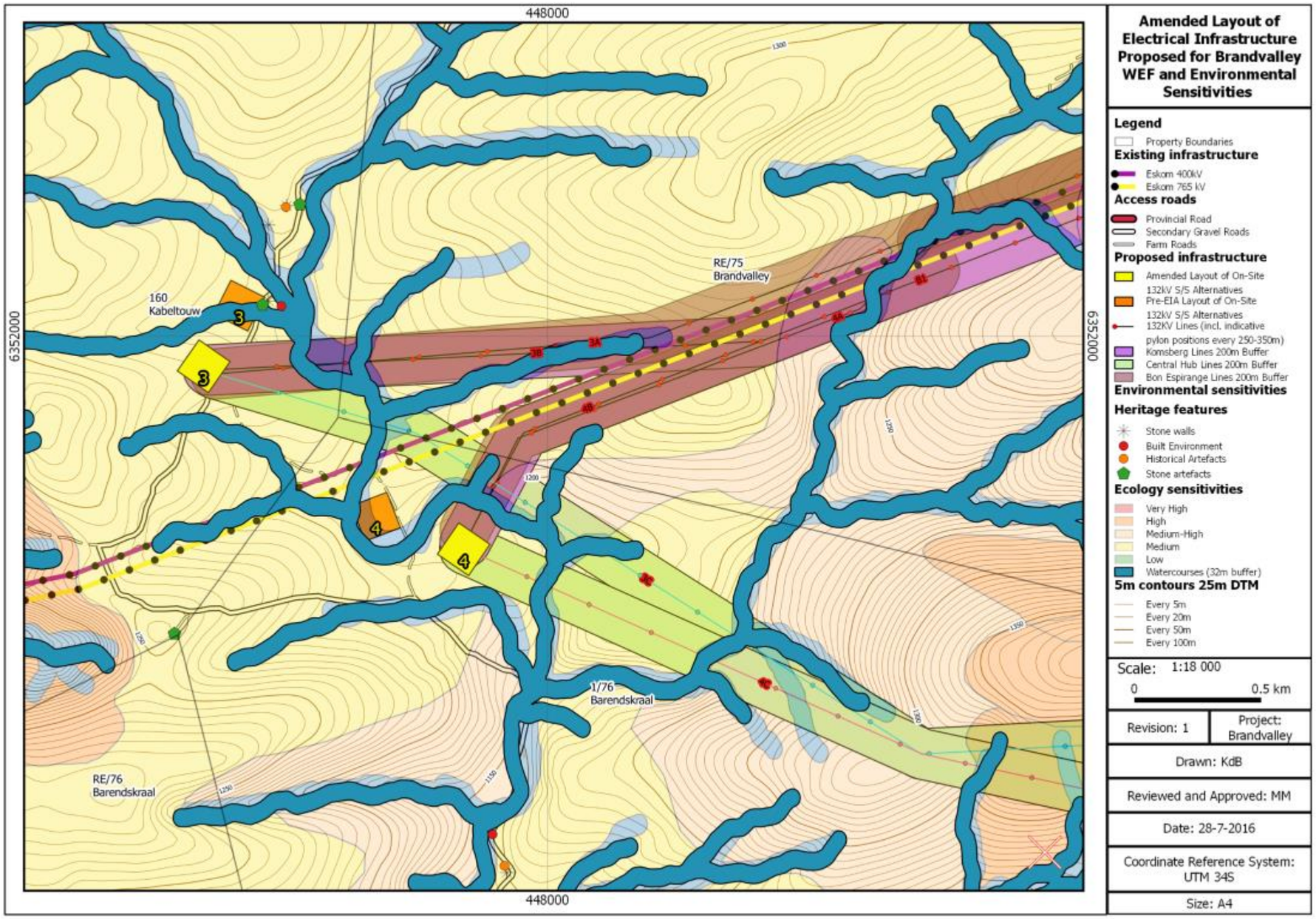

Figure 17: Post-EIA layout of the proposed 33/132kV onsite substations (orange location: pre-EIA; yellow location: post-EIA)

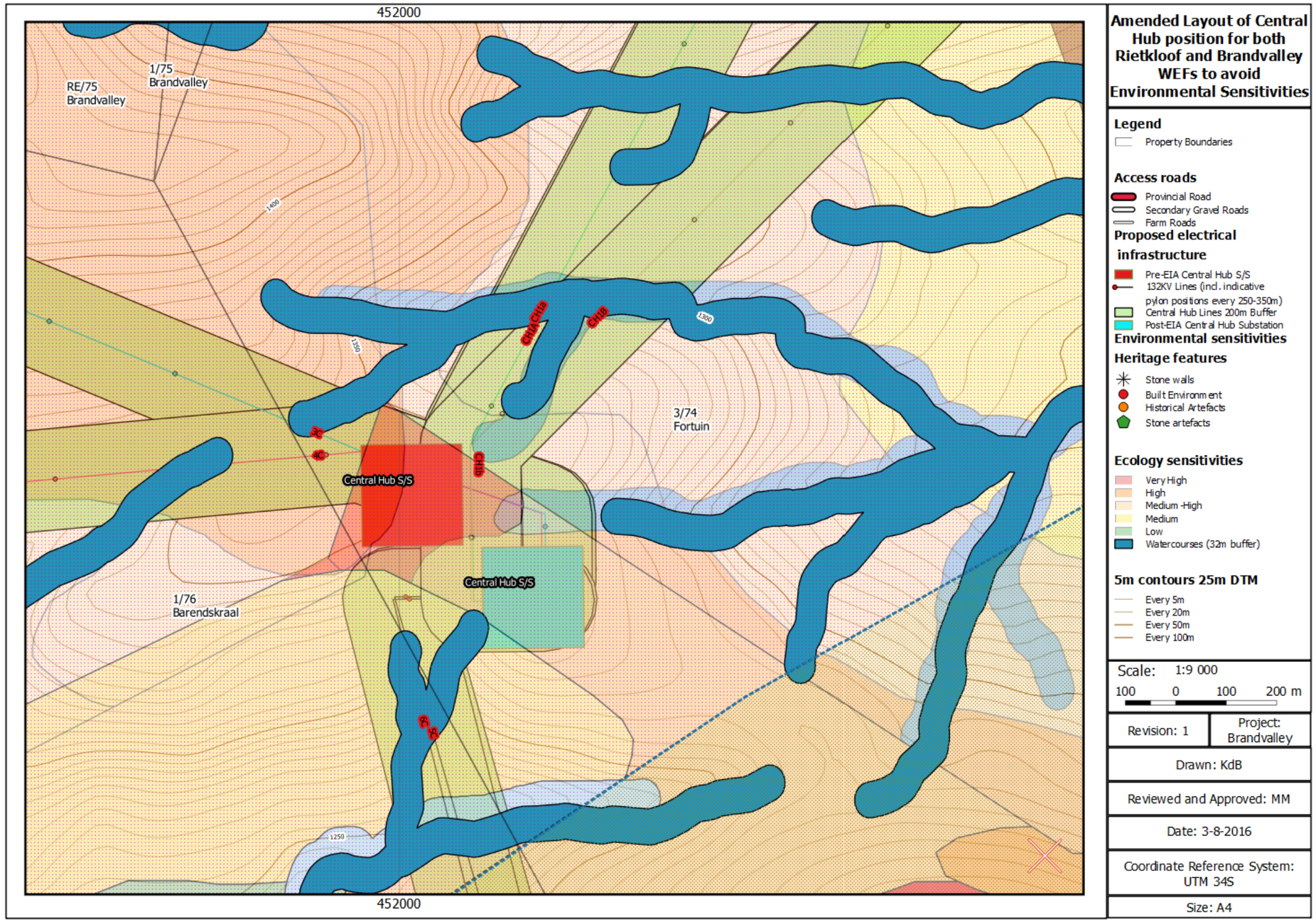

Figure 18: Post-EIA layout of the proposed onsite central hub substations (red location: pre-EIA; blue location: post-EIA)

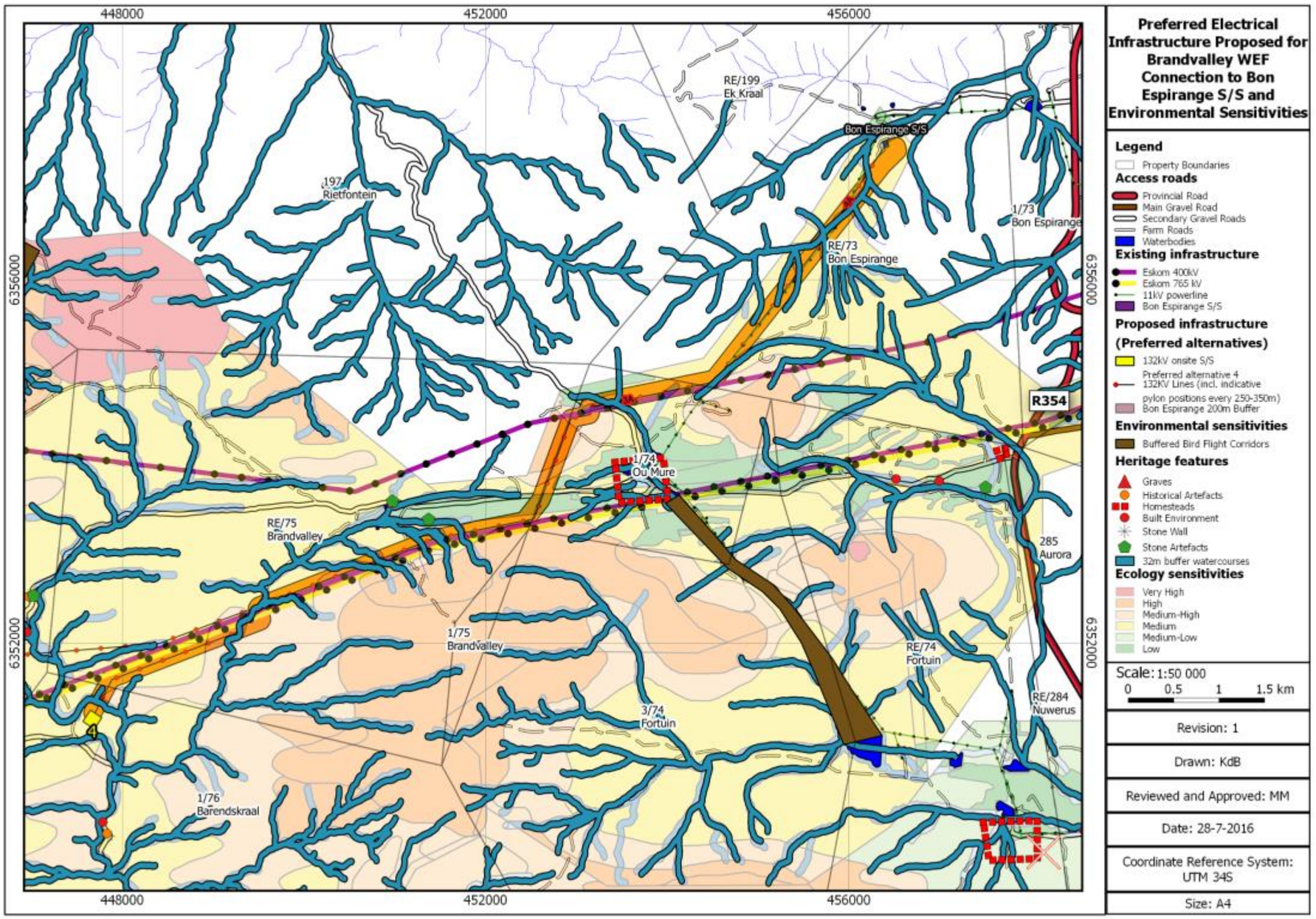

Figure 19: Preferred alternative substation 4 and 200m corridor to Bon Espirange and environmental sensitivities (Preferred layout for authorisation)

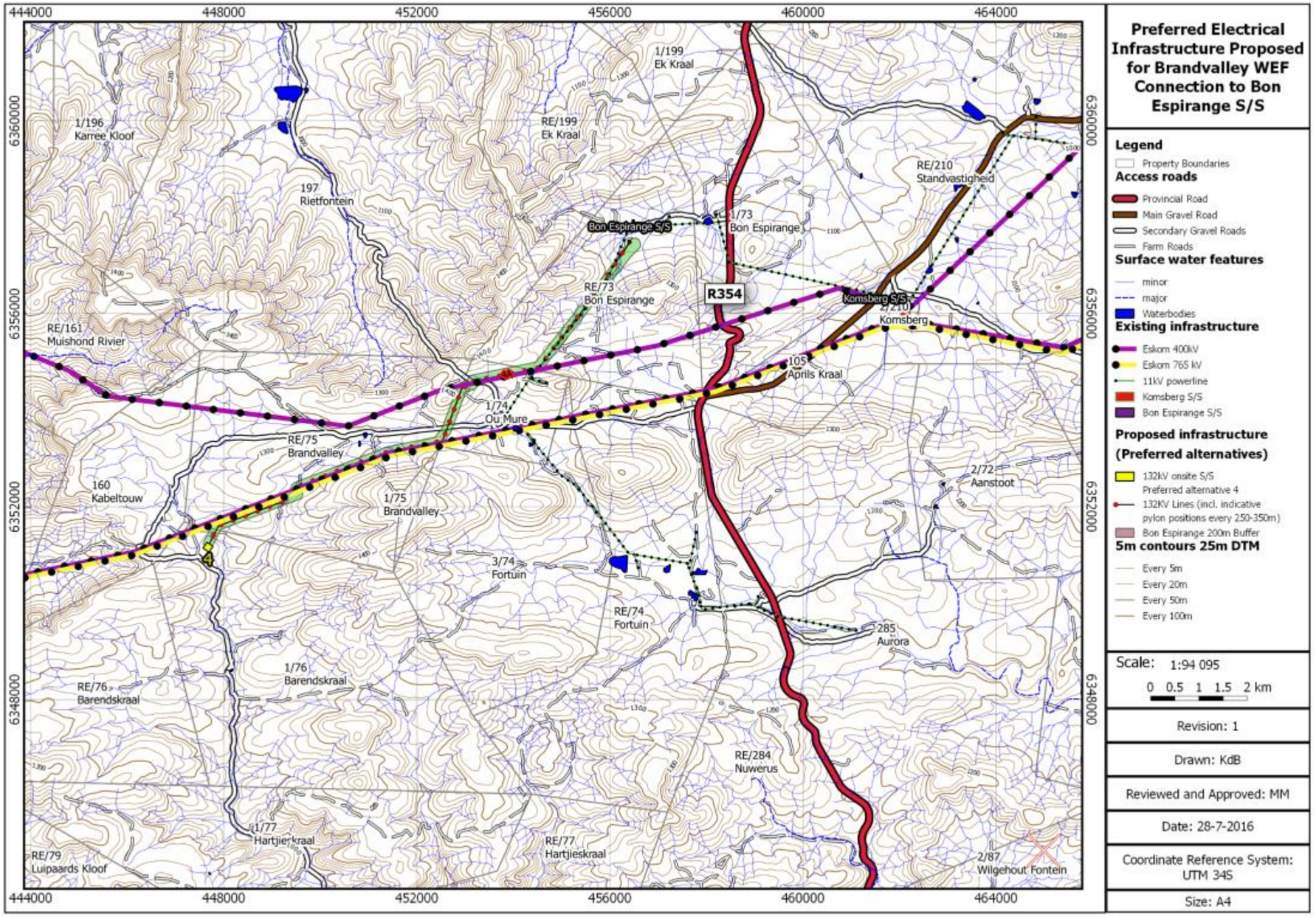

Figure 20: Preferred alternative substation 4 and 200m corridor to Bon Espirange (Preferred layout for authorisation)

5. OTHER SUPPLEMENTARY MAPS

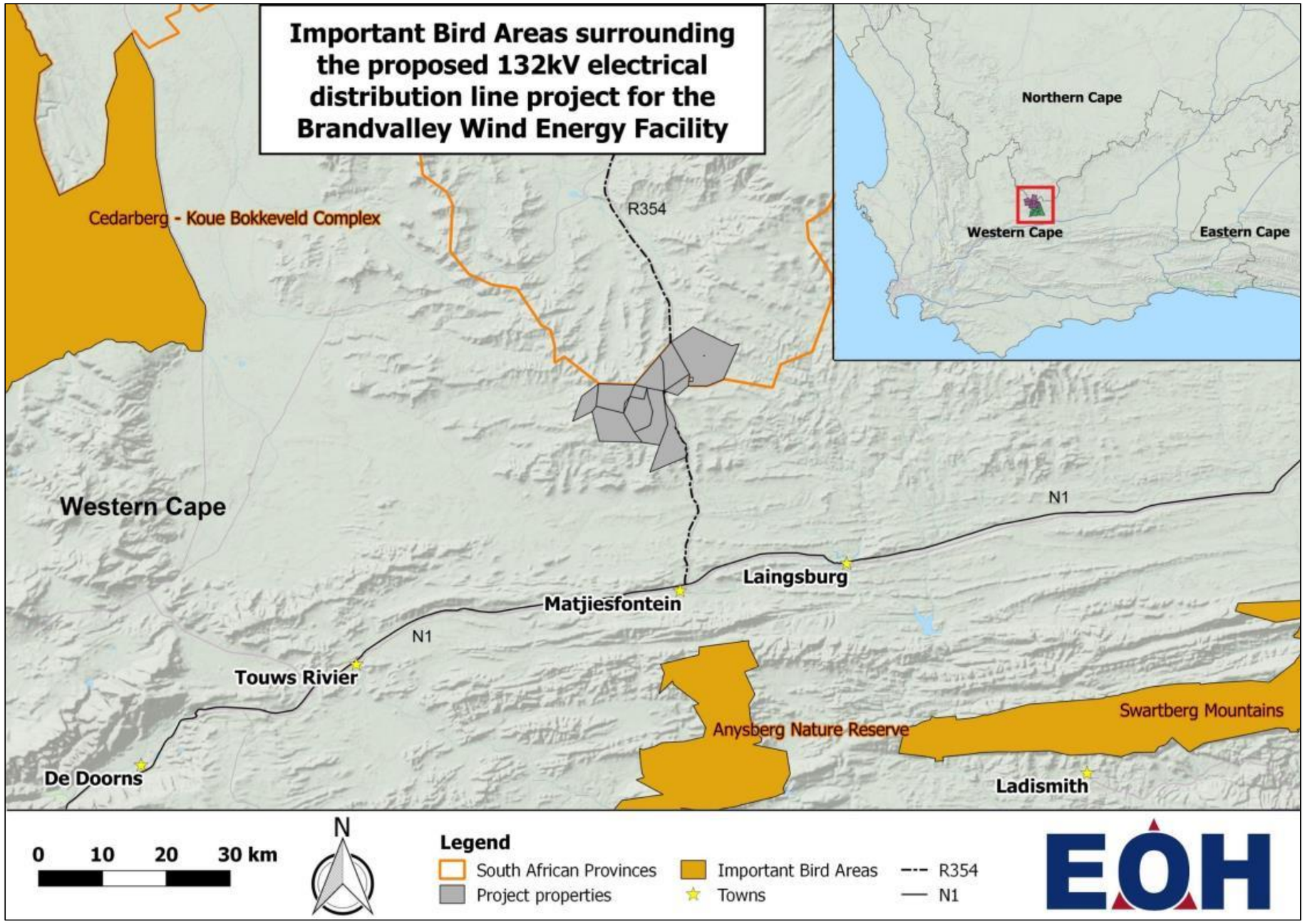

Figure 21: Important Bird Areas near the project region

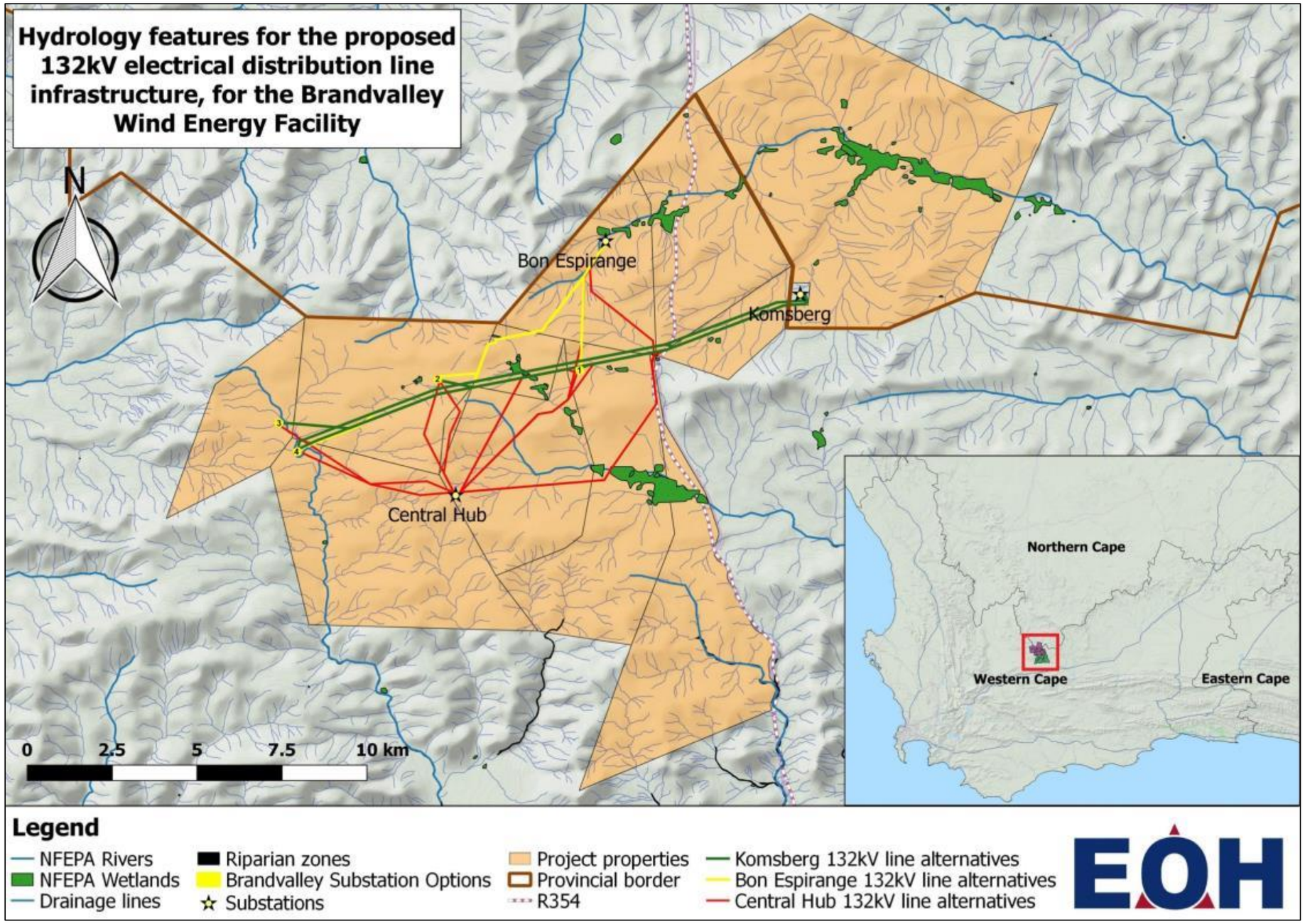

Figure 22: Hydrological features within the project region

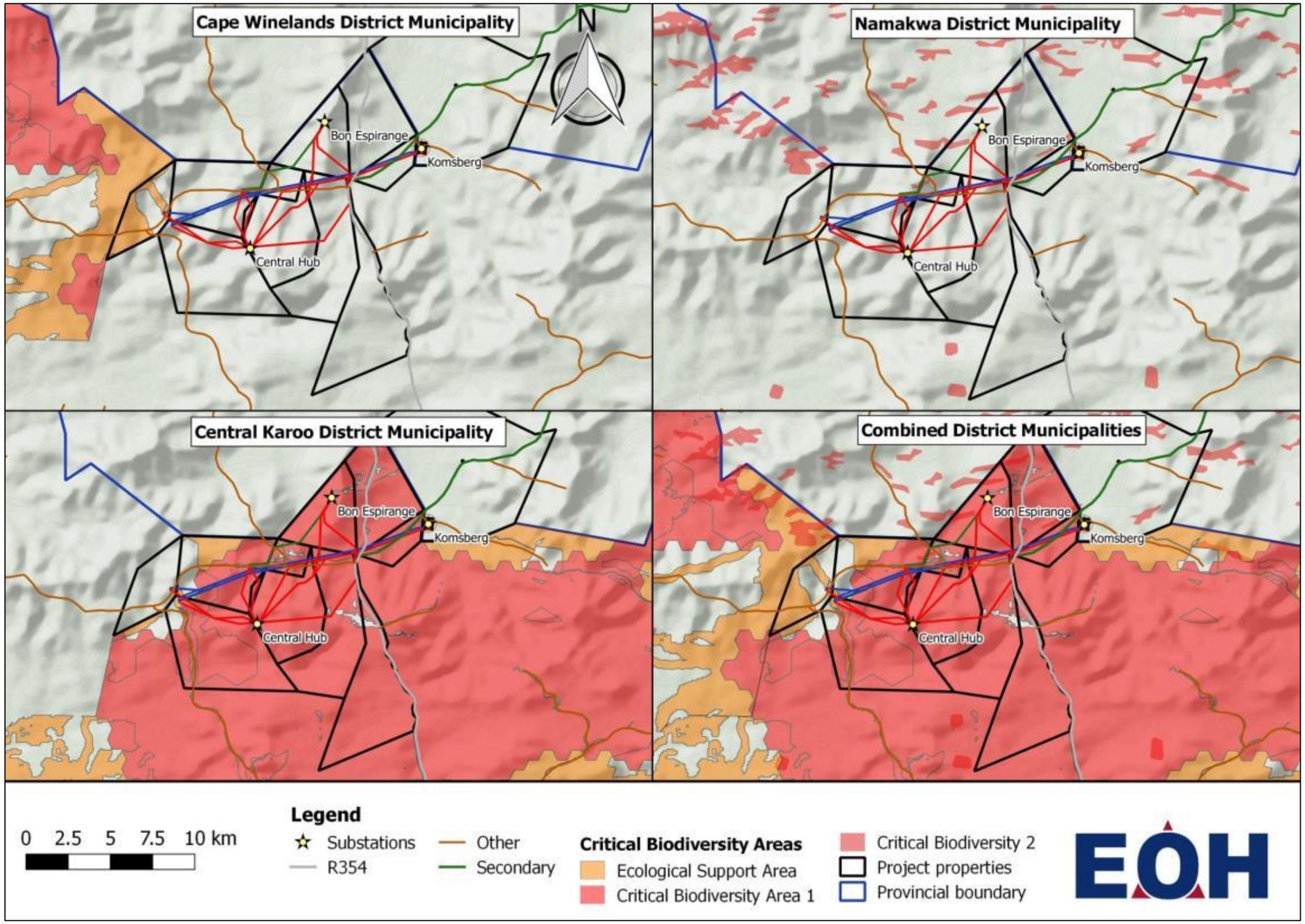

Figure 23: Critical biodiversity features within the project region

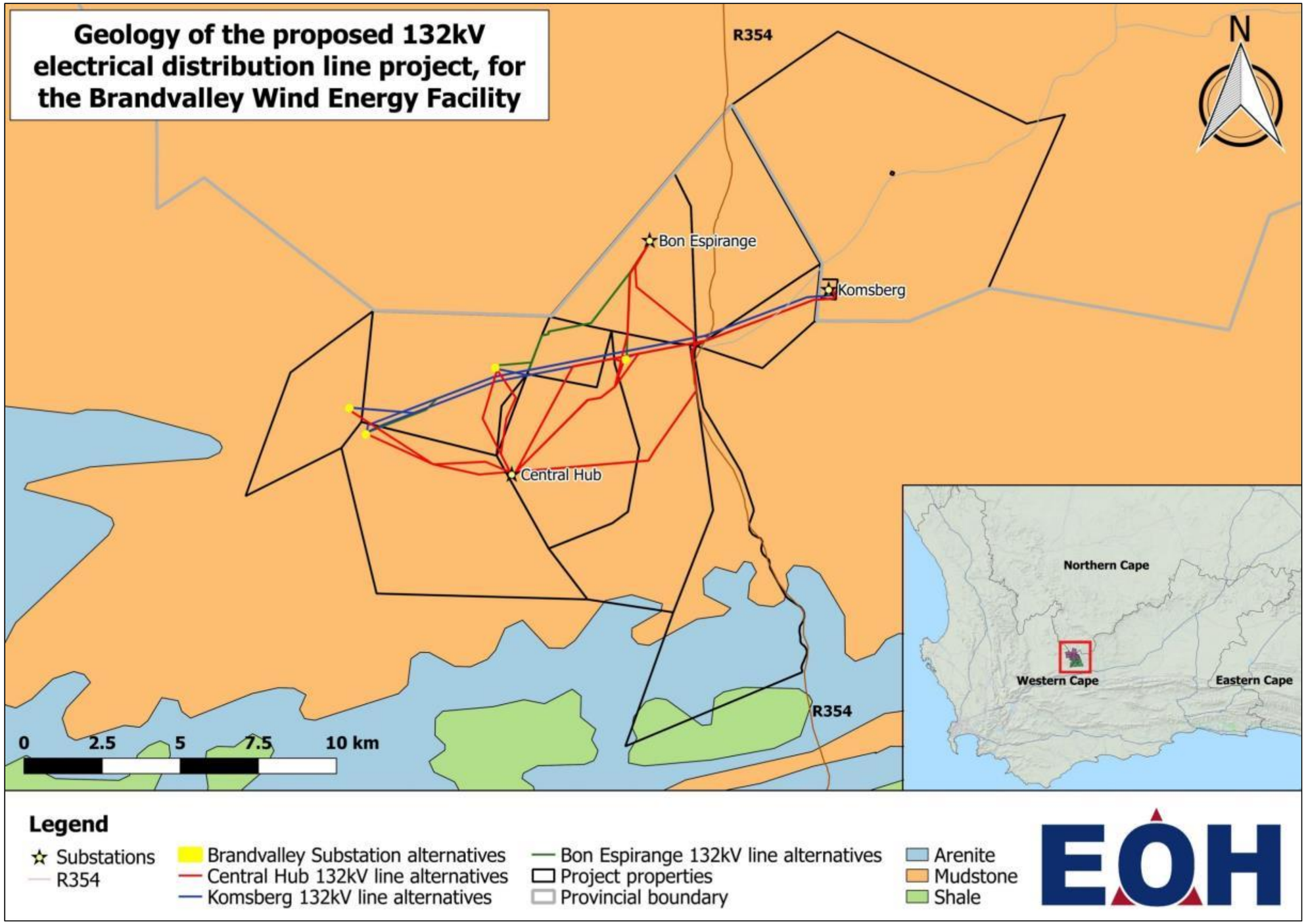

Figure 24: Geology of the project region

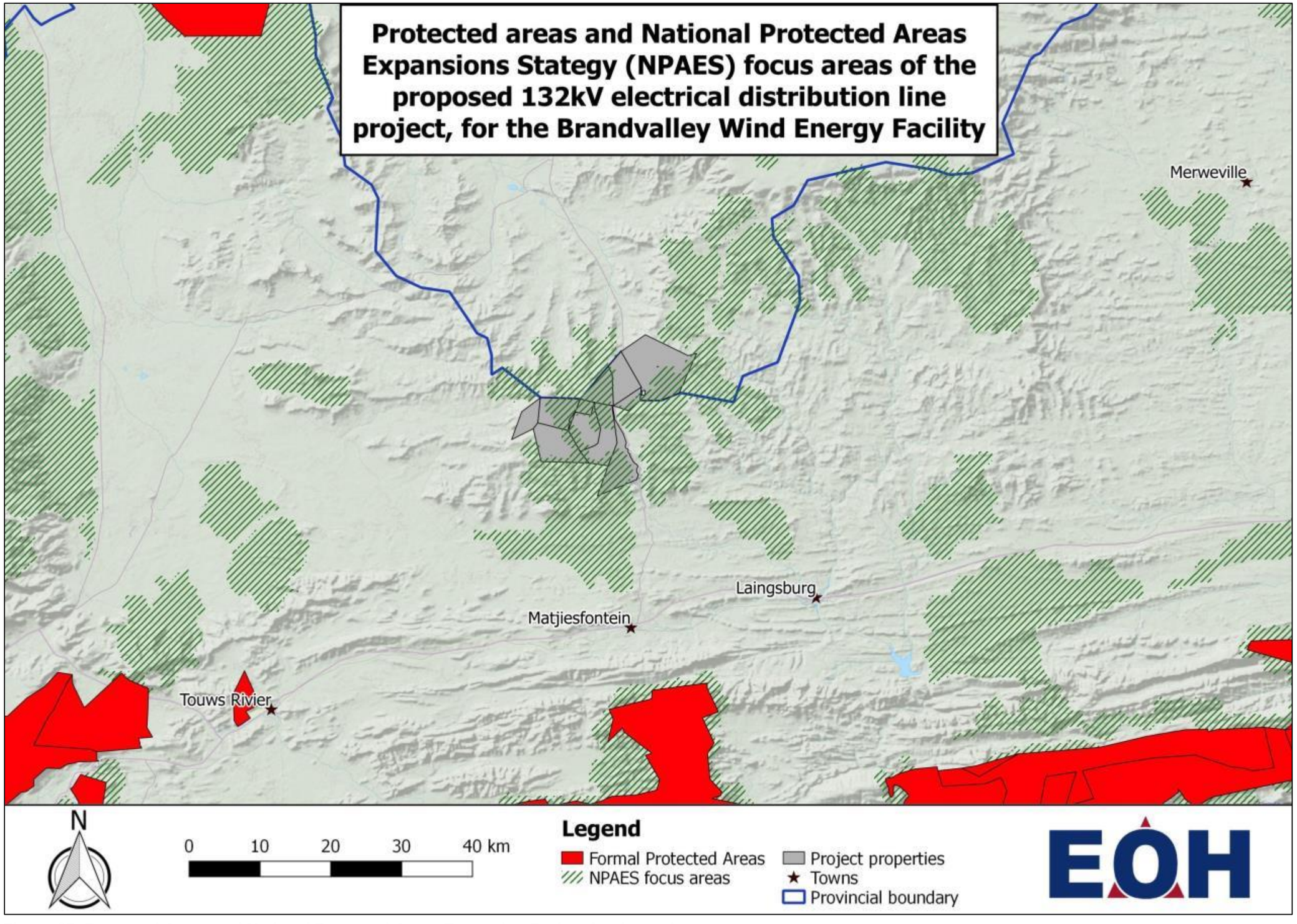

Figure 25: Protected Areas and National Protected Areas Expansion Project for the project

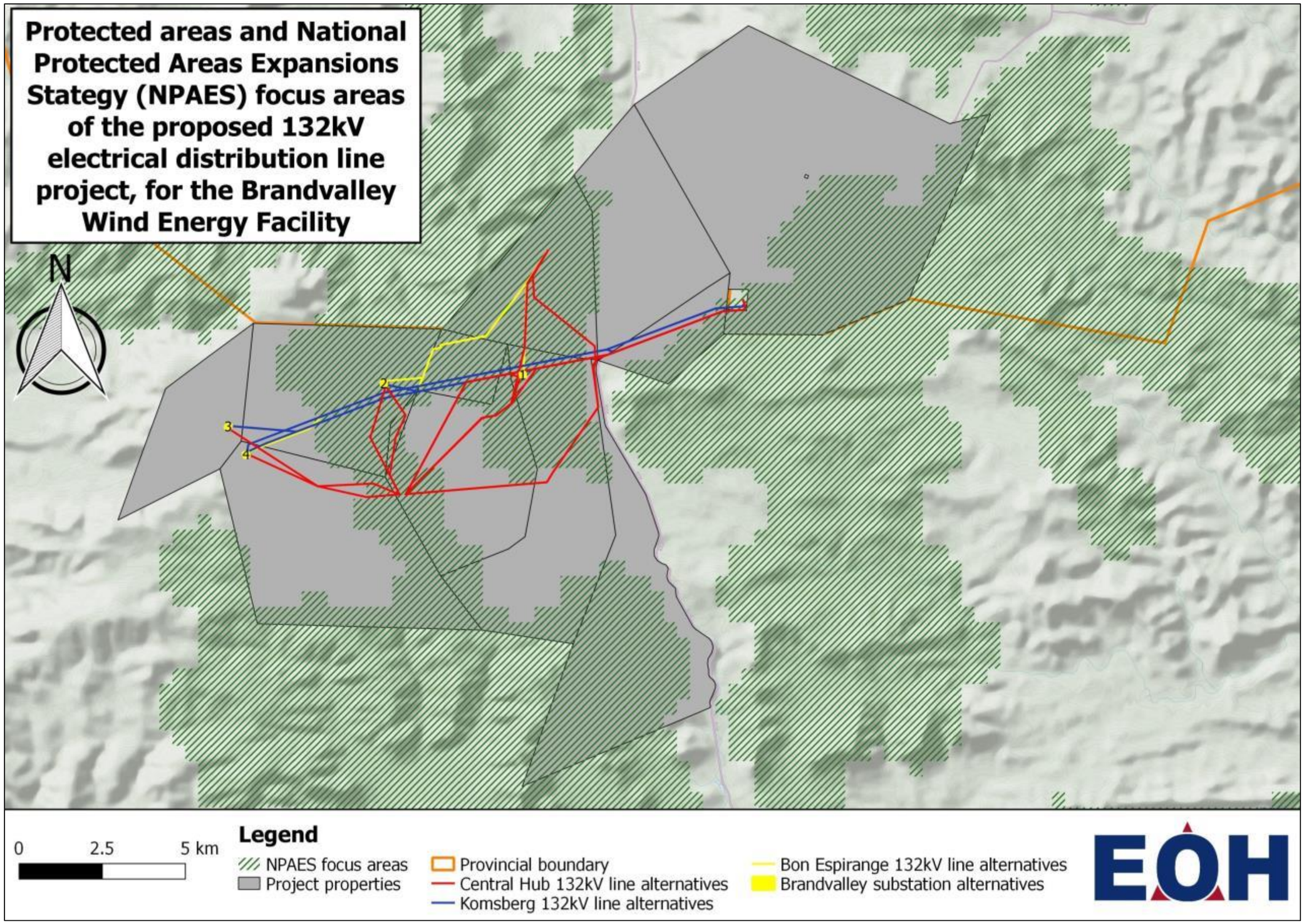

Figure 26: National Protected Areas Expansion Strategy regions near the project footprint

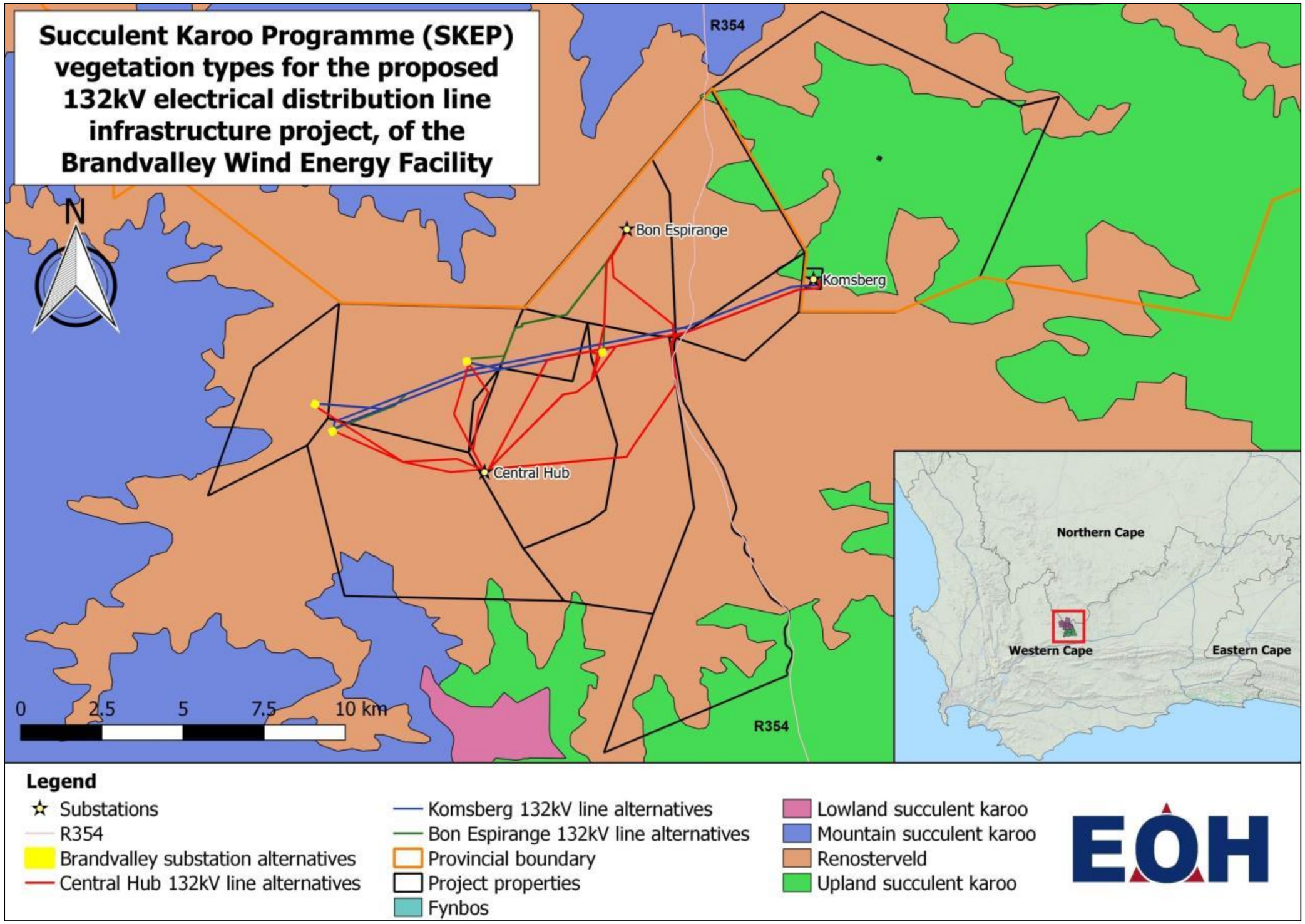

Figure 27: Succulent Karoo Expansion Programme regions within the project region.

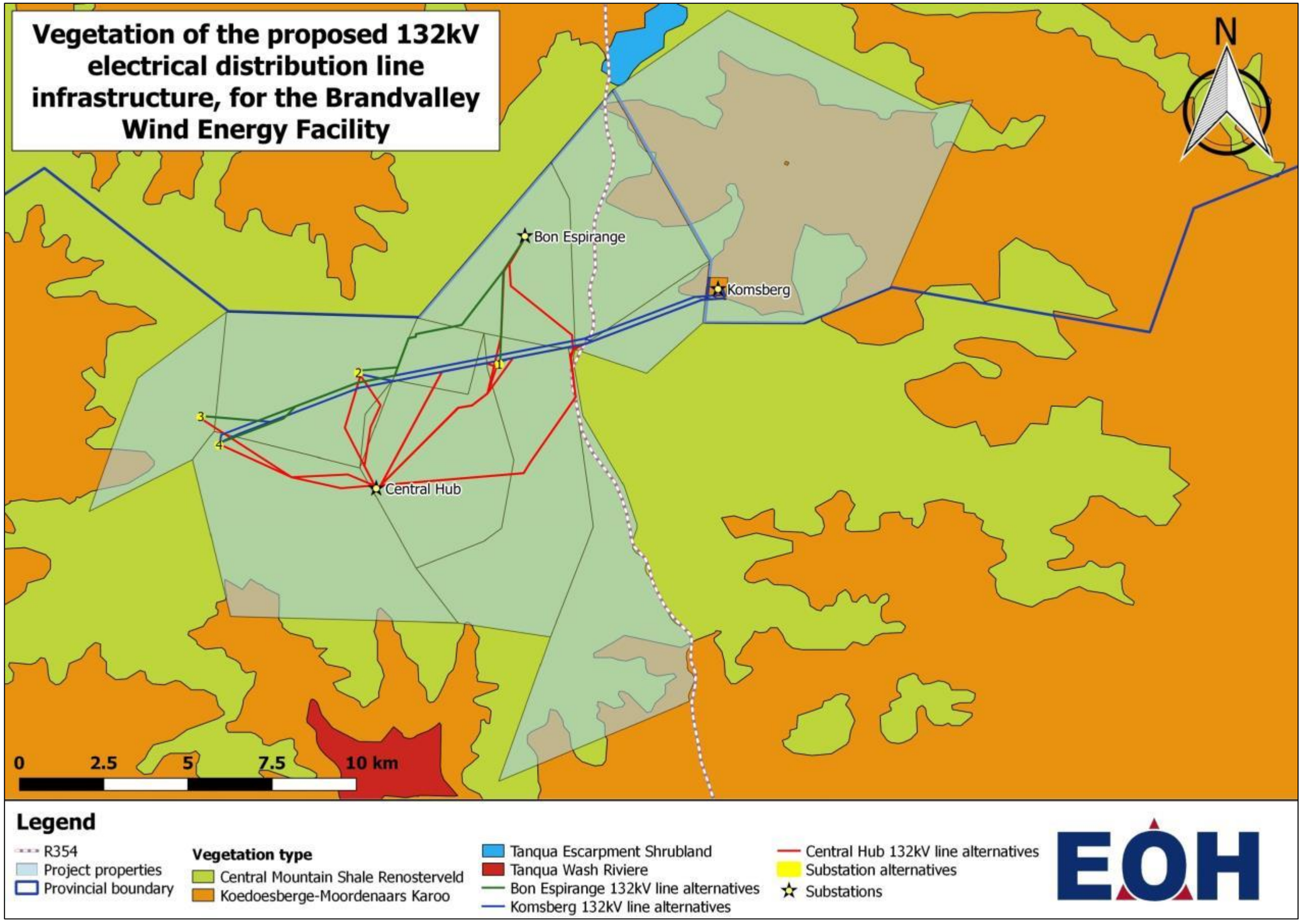

Figure 28: Vegetation types of the project region.

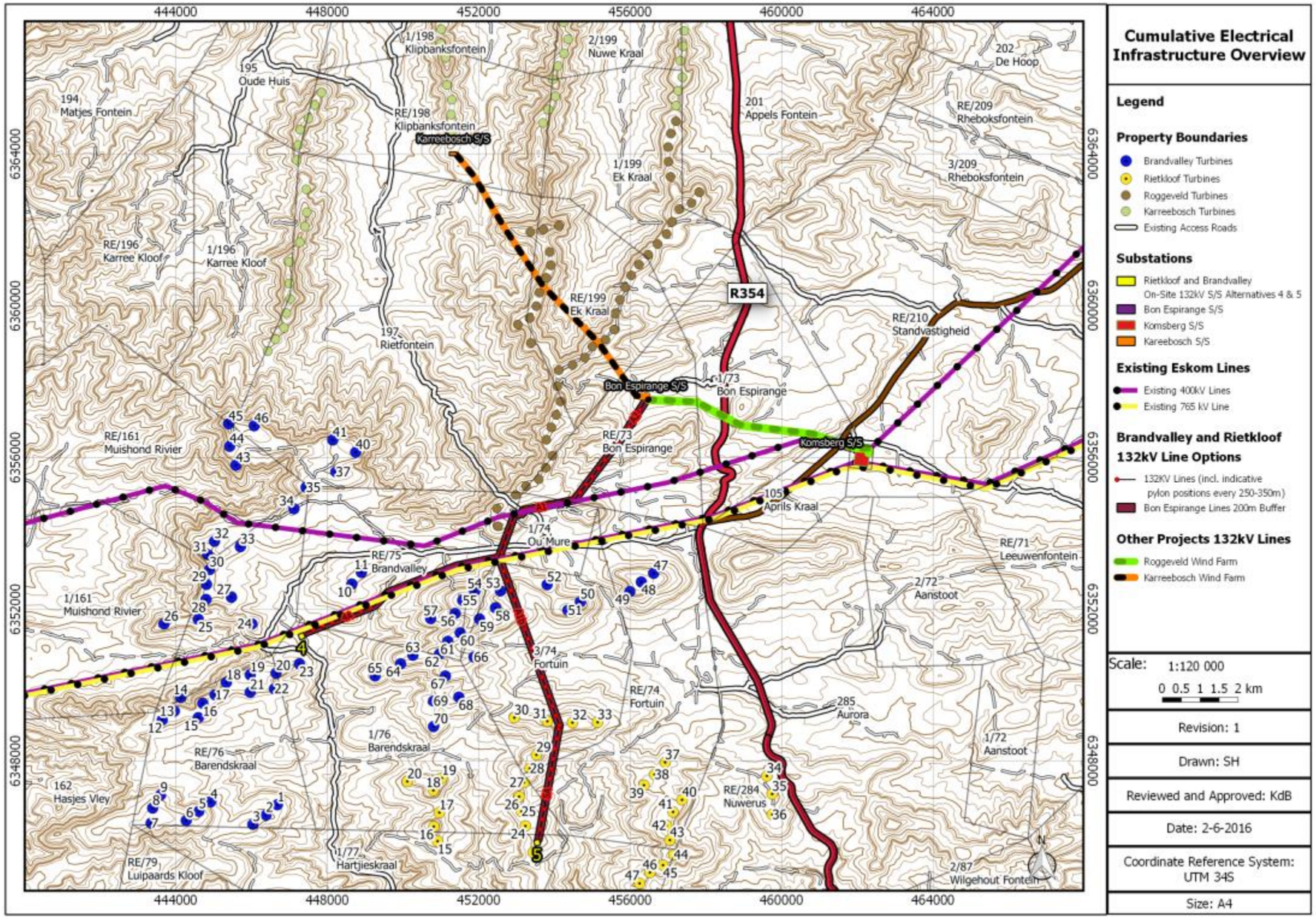

Figure 29: Cumulative Electrical Infrastructure Overview Map.

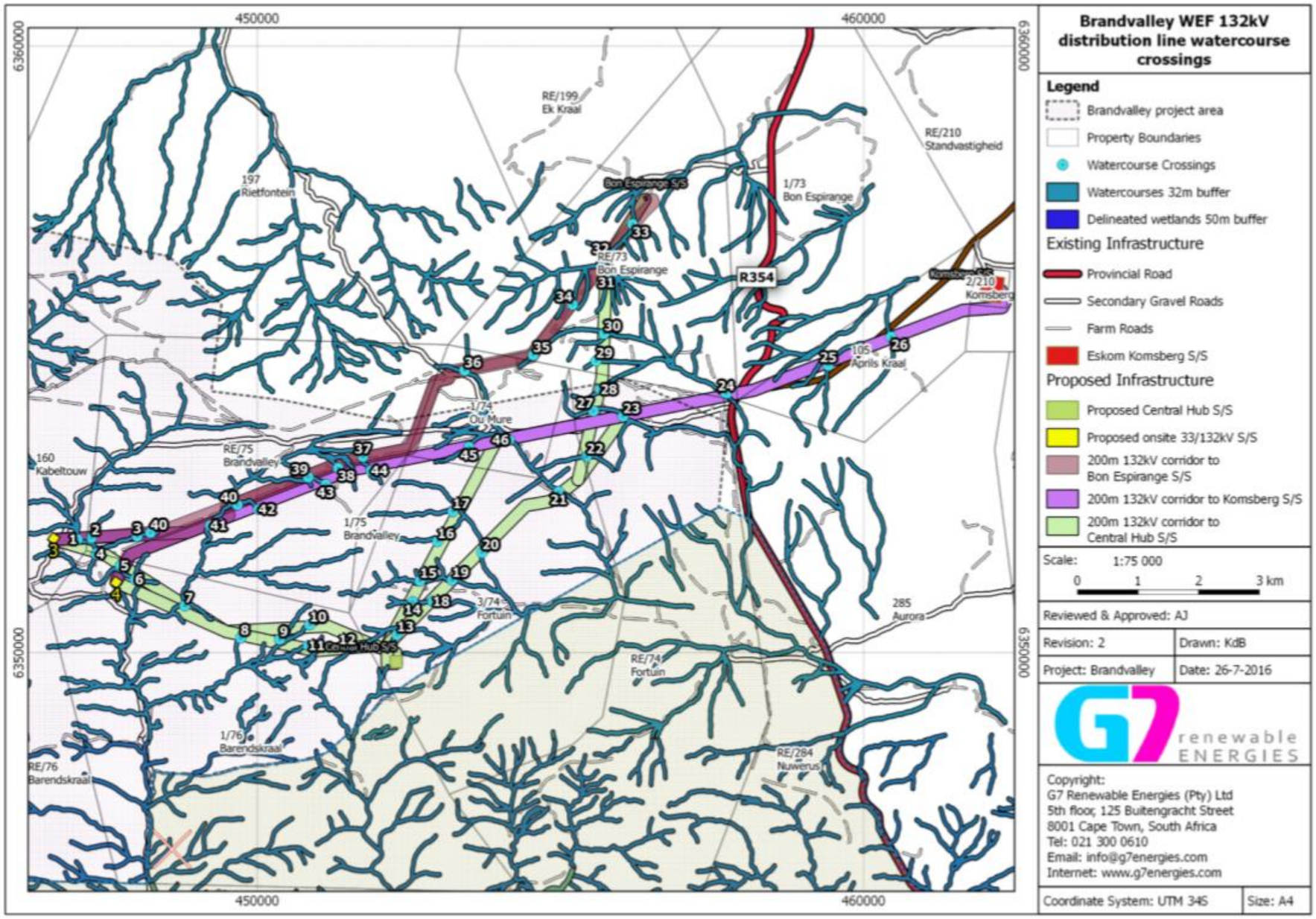

Figure 30: Overview of potential watercourse crossings. Watercourses can be avoided through micro-siting of the infrastructure within the buffer zones

Table E: Coordinates of potential watercourse crossings (numbers correspond with numbers indicated on Figure 30)

Potential watercourse crossings associated with the proposed 132kV distribution lines proposed for Brandvalley WEF					
id	**Latitude**	**Longitude**	**id**	**Latitude**	**Longitude**
1	-32.9702618	20.43314784	25	-32.944919	20.56585639
2	-32.9700554	20.43559964	26	-32.9407172	20.57696499
3	-32.9698745	20.44372604	27	-32.9515628	20.52417796
4	-32.9724512	20.43648723	28	-32.9483604	20.52560969
5	-32.9742097	20.44008885	29	-32.9441176	20.52485874
6	-32.9762868	20.4432989	30	-32.9401005	20.52629845
7	-32.9802392	20.45127335	31	-32.9312961	20.52673213
8	-32.9850655	20.46233498	32	-32.9285802	20.52726224
9	-32.9853124	20.46878324	33	-32.9238123	20.53141259
10	-32.9831606	20.4740848	34	-32.9357308	20.52077803
11	-32.9862578	20.47445308	35	-32.9432052	20.51377527
12	-32.9865646	20.48219142	36	-32.9454404	20.50164597
13	-32.9846922	20.48929484	37	-32.9581959	20.48364649
14	-32.9798114	20.49203107	38	-32.9598627	20.47976835
15	-32.9767183	20.49359936	39	-32.9611995	20.47395701
16	-32.9708603	20.49672817	40	-32.9652773	20.46142316
17	-32.9664139	20.49946171	40	-32.9693412	20.44605087
18	-32.9797714	20.49564326	41	-32.9683005	20.45663292
19	-32.9766325	20.49927509	42	-32.9659456	20.46515914
20	-32.9725224	20.50381187	43	-32.9622996	20.47704557
21	-32.9635522	20.51817758	44	-32.9602673	20.48505298
22	-32.9583527	20.52310614	45	-32.9568585	20.50235257
23	-32.9523979	20.5295855	46	-32.9557994	20.50945089
24	-32.9490949	20.54778395			