Dynamic Satellite Surveys PTY LTD

08061

Final Operations Report
on the

Injune 2D Seismic Survey

for

Blue Energy Limited

and

Terrex Seismic Pty Ltd

October 2008

The Director
Dynamic Satellite Surveys Pty Ltd
PO Box 713
Yeppoon QLD 4703
Telephone: 07 4939 2866
International: +61 7 4939 2866
Facsimile: 07 4939 2867
E-mail: yeppoon@dss.com.au

Dynamic Satellite Surveys Pty Ltd has a Quality Management System, externally certified to AS/NZS ISO 9001:2000 standards by SAI Global Pty Ltd (Lic #QEC10046).

This project was undertaken for Terrex Seismic Pty Ltd and Blue Energy Limited.

The sole purpose of the job was to install and survey 2D Seismic Lines and support the dozing operations. The use of the data for any other purpose is not authorised.

All data contained in this report and on the attached CD is deemed to be final and overrides any previous data received from DSS, unless otherwise stated.

Table of Contents

1

INTRODUCTION

The following report covers the **2008 Injune 2D Seismic Survey**, performed by **Dynamic Satellite Surveys Pty Ltd** (DSS) whilst contracted to **Terrex Seismic Pty Ltd** (Terrex) for **Blue Energy Limited** (BE).

The survey area was located East of the town of Injune, Central Queensland, Australia. Please see **Appendix A - Project Map**.

A total of three (3) 2D seismic lines were surveyed consisting of **28.980 kilometres**, pegged at 20 metre station intervals.

The survey operations were completed between the 17th and 20th of October 2008.

2

INSTRUMENTATION AND PERSONNEL

2.1 Personnel and Logistics

DSS personnel involved in the survey were as follows.

Ben Mason
- Bachelor of Science (Major in Geography)
- Senior Surveyor

Personnel and equipment logistics were supported by the DSS Yeppoon office.

Survey operations were based from the Injune Motel, Injune QLD.

2.2 Equipment

Equipment provided by DSS and used on this project.

	Description	Qty
Vehicles	DSS Toyota Landcruiser Trayback	1
Communications	Crew Mobile Phone	1
	UHF radio	1
	Handheld UHF radios	2
GPS receivers	NovAtel GPS Receivers with VHF telemetry	2
	Garmin 172	1
Computers	Toshiba A7	1
	Fujitsu XP tablets	2
	iPAQ PCs	2
Software	Nav05 field software - DSS	Ver 4.30
	MIB for Windows - DSS	Ver 6.55
	MapInfo Professional	Ver 8.5
	GrafNet	Ver 7.80
Miscellaneous	Canon iX4000 printer	1
	Sundry office and transport equipment	
	Field and Office Consumables	

3

SURVEY REFERENCE SYSTEMS

3.1 Geodetic Datum

This project was based on the Geocentric Datum of Australia 1994 (GDA94), which is based on the Geodetic Reference System 1980 (GRS80) model defined by the following parameters:

Datum:	GDA94(Geocentric Datum of Australia 1994)
Spheroid:	GRS80
Reference Frame:	ITRF92 (International Terrestrial Reference Frame)
Semi-Major Axis Length:	6 378 137.0
Inverse Flattening:	298.257222101
The Unit of Measure:	International Metre

3.2 Map Projection

Final rectangular coordinates were based on the Map Grid of Australia 1994 (MGA94). Parameters for this projection are as follows:

Projection:	Universal Transverse Mercator (MGA Zone 55)
Latitude of Origin:	0°
Central Meridian (CM):	147° E
Scale Factor at CM:	0.9996
False Easting:	500 000
False Northing:	10 000 000
The Unit of Measure:	International Metre

3.3 Height Datum

All elevations obtained relative to GDA94 have been reduced to the Australian Height Datum (AHD) using the AUSGeoid98 Geoid - Spheroid separation model to determine the geoid-ellipsoid separation (N) for the particular area.

GPS observations are made on the GDA94 datum. The height associated with this datum is an ellipsoidal height (h). The Australian Height Datum (AHD), the height datum associated with MGA94, is an orthometric height, which is measured as the height above mean sea level, or the geoid (H).

The function that defines the relationship between the ellipsoid and orthometric heights is:

H = h - N

Or

AHD = GDA94 - (Geoid / Ellipsoid Separation)

The value for the geoid/spheroid separation is interpolated from a national model called AUSGeoid98.

AUSGeoid98 is the third in a series of national geoid models produced for Australia by the Australian Surveying and Land Information Group (AUSLIG). The geoid-ellipsoid data is prepared for the Australian region from:

- EGM96 Global Geopotential Model;
- 1996 Australian Gravity DataBase, from the Australian Geological Survey Organisation (AGSO);
- AUSLIG / AGSO GEODATA nine-second digital elevation model;
- Satellite altimeter - derived free air gravity anomalies offshore;
- Theories, techniques and software developed by Associate Professor Will Featherstone, Curtin University of Technology[1].

AUSGeoid98 N values were interpolated using the GrafNet Version 7.80 software, distributed by Waypoint Consulting Inc.

[1] Johnston, G.M., Featherstone, W.E. (1998) AUSGeoid98: A New Gravimetric Model for Australia

4

SURVEY CONTROL

Survey control was established at PSM BAS01 (from the previous DSS job 07088).

Station	Easting	Northing	AHD	Comments
BAS01	667136.898	7139637.608	422.563	DSS

The misclose values of control checks can be seen in **Appendix B - Survey Control, Miscloses and Ties.**

5

MONUMENTATION

All lines were pegged at a 20-metre station interval.

Wooden pegs were placed at every station as well as a spray-painted mark. Pegs placed at every fifth station were numbered front and back.

Permanent Markers were used for all GPS base stations. These consisted of a star picket with an associated tag stating DSS job and identification numbers.

6

METHOD OF SURVEY

6.1 Line Preparation

Line clearing was completed prior to the arrival of the survey crew.

In addition to DSS' single surveyor pegging crew, Blue Energy provided two offsiders to aid with pegging as well as oversee the operation.

Line trace diagrams were digitally completed in the field for each line, which were then forwarded to Terrex for use by the crew.

6.2 GPS Surveying

There are three modes of use in GPS surveying; static, kinematic, and real-time kinematic. On assessment, it was decided a real-time kinematic (RTK) survey method would best enable position and elevation co-ordinates to be acquired in real-time and on the appropriate datum.

The survey method utilised phase data received from US Navy NAVSTAR satellites to provide three-dimensional positioning. When RTK surveying, one receiver was set up as a base station at a known location while the other receiver was used as a remote rover. To obtain real-time capabilities, VHF telemetry was required between the base and the remote GPS receiver.

NovAtel real-time kinematic methods can achieve accuracies of better than +/-0.05m in position and elevation, depending on base line length. The expected precision for locating pegged positions is better than 0.3 metres, and is generally better than 0.2 metres.

Initialisation of the OEMV-4 rover GPS usually takes as little as one minute, although this is greatly dependant on satellite geometry, availability and base line length.

6.3 Processing and Quality Control

All survey data was immediately recorded internally on the Fujitsu XP Tablets and subsequently downloaded to the office computer each evening.

Quality of the satellite data was monitored by careful examination of the various on-screen quality control statistics produced by the Nav05 software. These checks on data integrity are in the form of standard deviation (or sigma) values for Easting, Northing and Height and are generally better than 0.05 metres.

Any recording of positions where the standard deviation values exceeded 0.1 metre was highlighted to the surveyor at the time of recording. Following this, it was possible to re-initialise the GPS in order to obtain a more accurate solution. Any recorded position falling outside the required tolerances was flagged for further investigation and re-recording if necessary.

Numerous checks on pre-recorded marks were observed during each days survey in order to confirm the integrity of the GPS base receiver and the placed markers.

Coordinates were also checked in the office by determining point-to-point direction and distance. Profile plots were examined in detail to identify any height anomalies. Any points showing unusual position or height details were flagged and checked in the field.

7

DATA PRESENTATION

All line files were checked and finalised before the survey crew demobilised from the prospect.

All final data was in UTM grid coordinate format on the MGA94 datum on the GRS80 reference spheroid. All elevations were on the Australian Height Datum (AHD71).

Final data produced were:

Daily Reports Folder	-	PDF file of each daily report.
MapInfo Folder	-	associated TAB files.
Maps Folder	-	PDFs of general maps throughout the area.
Photos Folder	-	JPG files of all job photographs.
Survey Data		
BE08-XX.uka	-	Line data in UKOOA format.
BE08-XX.seg	-	Line data in SEGP1 format.
Trace Diagrams	-	Trace maps of the seismic lines.

All files are backed up on digital disks in the Yeppoon office for future reference.

No hard copy data was provided.

8

HEALTH, SAFETY AND ENVIRONMENT

DSS personnel are aware of safety conditions concerning all exploration seismic surveys. The DSS **"Quality Policy Statement"** and **"Health, Safety and Environment Policy"** were adhered to at all times.

Each DSS vehicle was fitted with a UHF radio, shovel, first-aid kit, CO_2 and water fire extinguishers, vehicle recovery equipment, rotating beacon and weekly vehicle maintenance check lists. The senior surveyors vehicle was also fitted with a 3G mobile phone kit, Satellite phone kit and HF radio.

9

OPERATIONAL ASPECTS

The DSS survey crew based operations for the Injune Seismic Survey in the township of Injune. Due to the nature of the prospect, it was only a short trip to reach the project each day.

The lines, which were clearly visible, had been cleared prior to the arrival of the DSS pegging crew. It was very helpful having both Cameron Belcher and Anita Massih assist with the pegging, as they were also able to make decisions in the field with regard to issues as they arose during the survey.

Due to the nature of the landscape and the inability for the lines to be cleared particularly straight, we adopted the technique of radial pegging for the entire job. This ensured that the distances between pegs did not exceed the length of the Terrex seismic cables.

There was one property which required a vehicle wash down certificate to gain entry. To save time, we ensured that this section of the line was completed first before progressing to the rest of the survey.

10

CONCLUSIONS AND RECOMMENDATIONS

The surveying aspect of the operation was conducted with minimal disruption and few issues. Ideally, it is recommended that there be more communication with Blue Energy with regard to the nature of the offsider role. Despite being basically a one-person job, having two people assist made the project run efficiently.

It was excellent having direct contact with the client (BE) in the field, as it allowed us to make decisions on the spot and, therefore, saved a lot of time.

In future, it is recommended that the final line designs be provided to DSS as early as possible, as only copies of the original design lines were supplied.

The job was completed without accident or injury.

DSS welcome both positive and negative feed back on all projects. Feedback enables us to strive towards constant improvement in our operations and service provided.

Signed,
Dynamic Satellite Surveys Pty Ltd

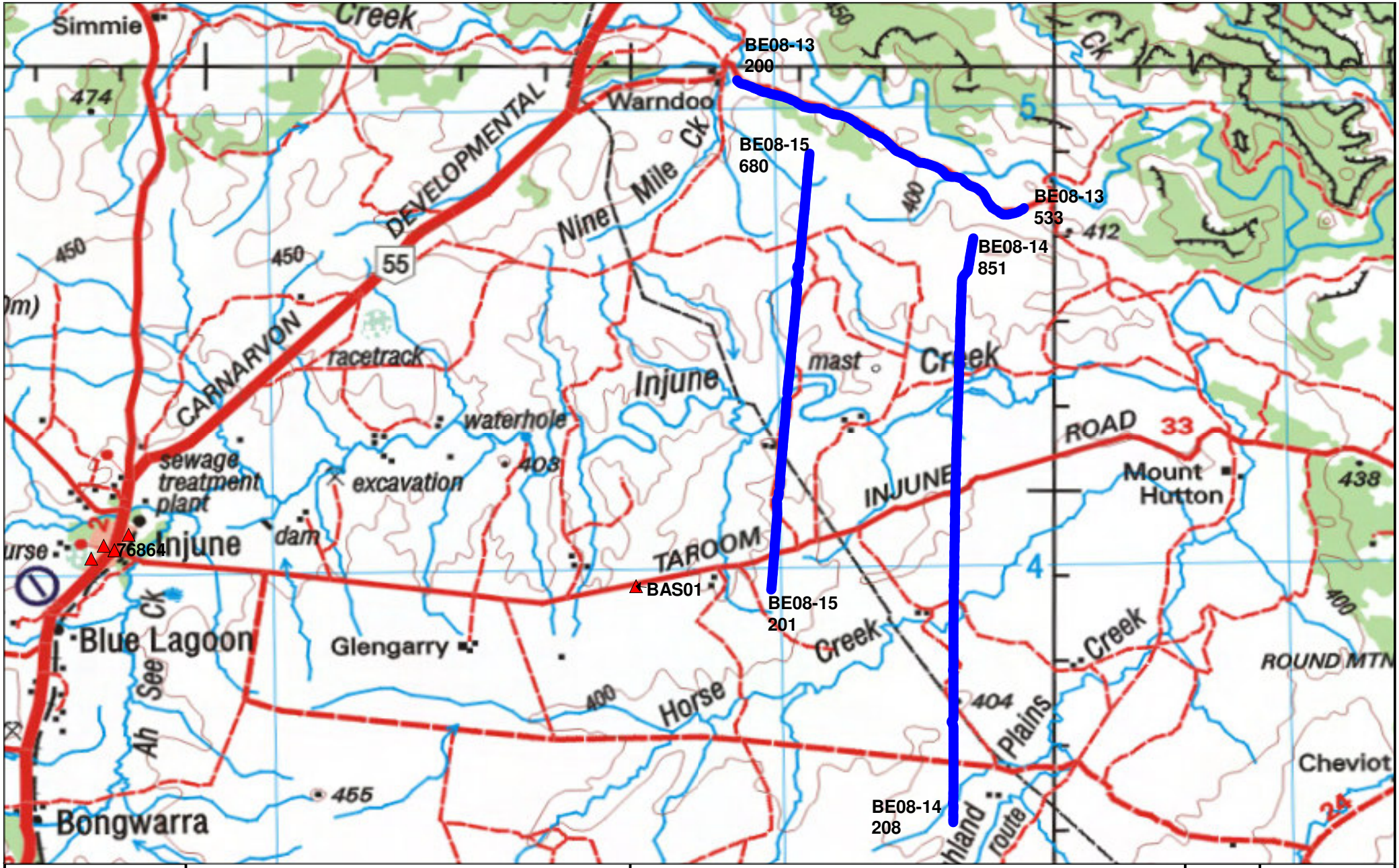
Ben Mason

Senior Surveyor

11

APPENDICES

Project Map



Dynamic Satellite Surveys PTY LTD

The purpose of this map is to represent the surveyed digital data in a pictorial manner only. The accuracy of the underlying topographic image in no way relates to the accuracy of the surveyed digital data. Features on the topographic map have not necessarily been surveyed by DSS. Any use of this map for reasons other than the purpose for which it was created is not authorised.

Dynamic Satellite Surveys Pty Ltd 1800 060 407

TERREX SEISMIC PTY LTD
BLUE ENERGY LIMITED

2008 INJUNE 2D SEISMIC SURVEY

Scale	1:100,000 (A4)
Drawn	DW
File	08061 Map
Rev:	0.0
Date	06-11-2008

Survey Control, Miscloses and Ties

Survey Control, Miscloses and Ties

All values are MGA 94 (Zone 55), AHD71

Initial Control Used

Station	Easting	Northing	AHD	Comments
BAS01	667136.90	7139637.61	422.56	DSS

Checks

Station	Easting	Northing	AHD	Comments
PM76864	656873.91	7140546.71	392.16	Given
PM76864	656873.96	7140546.70	392.16	Observed
	0.05	-0.01	0.00	

Line Lengths Summary

2008 Injune 2D Lines

Station Interval = 20.0 m

Seismic Line	Start	End	Distance
BE08-13	200	533	6.66
BE08-14	208	851	12.86
BE08-15	201	410	4.18
BE08-15	416	680	5.28
		TOTAL	28.98

Note: Gap on Line 15 over no-go property.

Photographs

Trace Diagrams

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

LINE: BE08-13

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 1 OF 1 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 200 TO STN 533 SHOOTING DIRECTION: East to West BEARING: ____ °

200 EOL

Line runs along Webster road

Track 306

307

307 Dry Creek

309

Track 364

365

Track 368

370

Grid 376 - 377

384 Dry Creek

386

Track 430

431

Overhanging trees 448 - 449

Track Access to Line BE08-14 459

458

Grid 511 - 512

533 EOL before Grid

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

LINE: BE08-14

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 1 OF 3 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 851 SHOOTING DIRECTION: South to North BEARING: ____ °

851 EOL

Fence 832 831

Dry Creek 809 807

Trees 785 - 806

Steep hill - 715 - 728

Dry Creek 712 710

Fence 697 696

Rough ground 694 - 696

Creek 693 691

Handcarry - 693

692 - Dead station - Vibe skip

Access 350m East - if dry

Dry Creek 680 679

Fence 667 666

gate 200m east

Rough ground 593 -666

Dry Creek 582 581

Trees - 592

Boundary Fence 571 570

gate 1km east

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

LINE: BE08-14

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 2 OF 3 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 851 SHOOTING DIRECTION: South to North BEARING: ____ °

Main Road Handcarry 570 569

Boundary Fence gate 100m west 568

Trees 548

Boundary Fence Access via gate to East 546

Access via gate to West 545

Trees 537 - 536

Dry Creek

500

Rough terrain trees - 470 - 476

Dry Creek

471

470

Trees 449

Track 448 447

Boundary Fence 445 Track to west 444

Fence 441 440

Fence - property boundary 435 434

Dry Creek Vibe skip

426

HANDCARRY STATION 427 428

Crossing to West

Overhanging Trees 426 -418

Short station interval 380 - 381 (14m)

Boundary Fence 380 379

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

LINE: BE08-14

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 3 OF 3 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 851 SHOOTING DIRECTION: South to North BEARING: ____ °

Fence - property boundary

379

Trees 376 - 373

Track

340

339

Beside windmill - 320

Logs in grass - 316 - 300

Overhanging Trees 279

Fence - property boundary

271

272

Main Road

270

269

Fence - property boundary

Access 1.420 west

268

Overhanging Trees 246 - 245

Trees 242 - 233

228

Dry Creek

229

Overhanging Trees 225- 224

Overhanging Trees 216 - 215

208 EOL

Dynamic Satellite Surveys

TRACE DIAGRAM

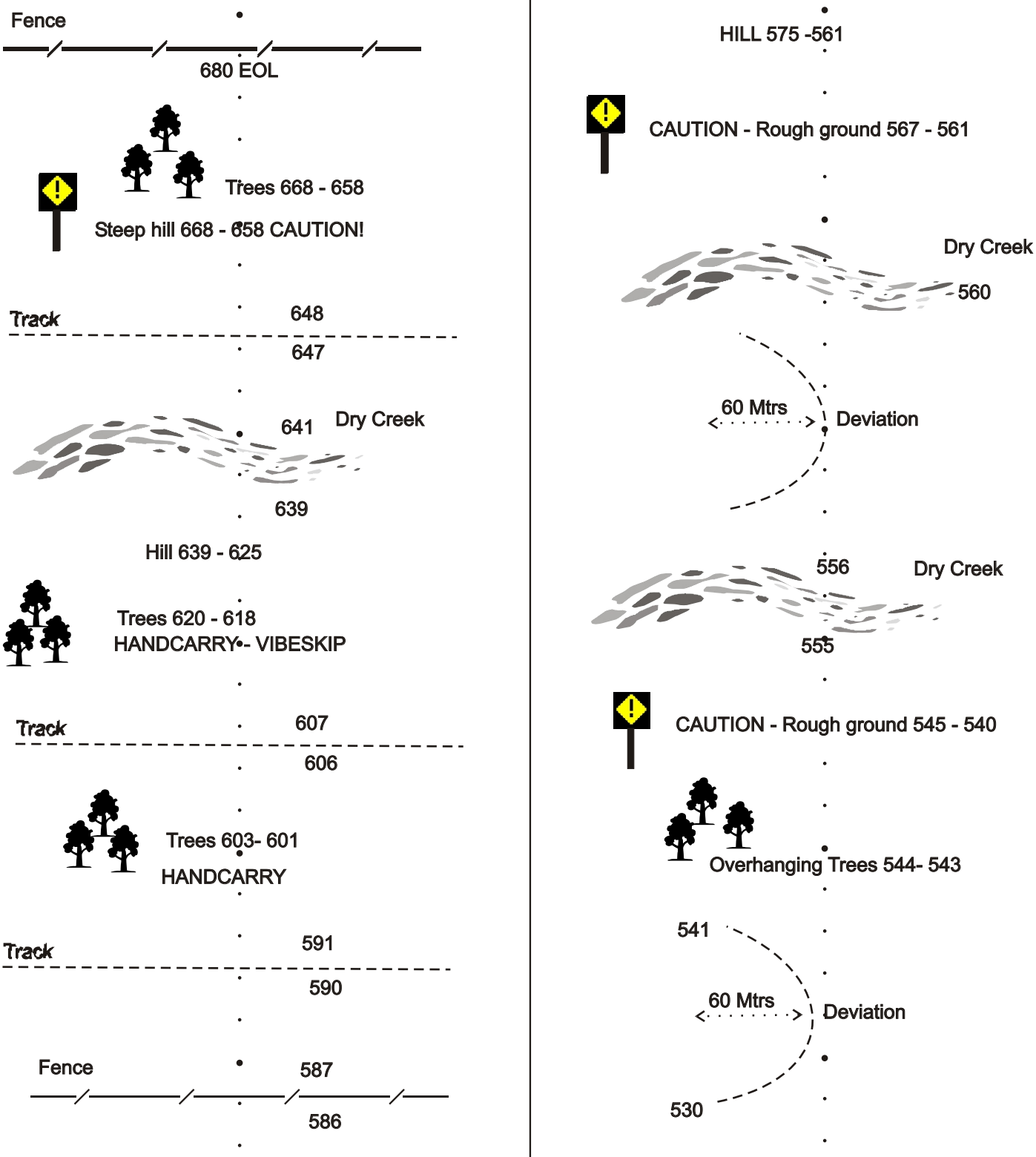
DSS-FF-07
REV 8.0
August 2004

LINE: BE08-15

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 1 OF 4 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 680 SHOOTING DIRECTION: North to South BEARING: ____ °



Dynamic Satellite Surveys

TRACE DIAGRAM

LINE: BE08-15

DSS-FF-07
REV 8.0
August 2004

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 2 OF 4 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 851 SHOOTING DIRECTION: North to South BEARING: ____ °

536 Dry Creek

535

Track 501

500

Track 474

473

Track 468

467

CAUTION - Rough ground 467-442

Track 448

447

Track 443

442

438 Dry Creek

441

HANDCARRY VIBESKIP

Line Access 100m east over crossing

CAUTION - Rough ground 437 - 432

Track 432

431

CAUTION -WASHOUT 421

421 Dry Creek

420

417 Dry Creek

416

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

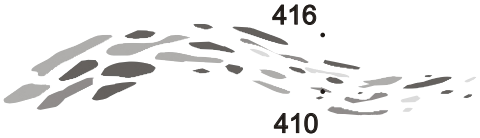
LINE: BE08-15

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 3 OF 4 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: ____ m

FROM STN 208 TO STN 851 SHOOTING DIRECTION: North to South BEARING: ____ °

416



410

VIBE SKIP

ACCESS 200M EAST ALONG TRACK across river

Hill - 403 - 399

Fence 399

398

Access south 200m

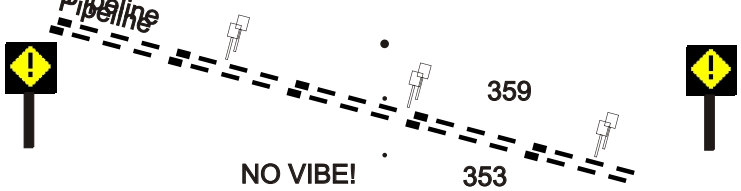
Rough ground 387 - 386

Track 373

372

Rough ground 370- 362

Pipeline



359

NO VIBE!

353

Track 317

316

Fence 315

VIBE SKIP

315 - 309 HAND CARRY, NO VIBE!

Fence ACCESS 200M EAST through gate

309

302

30Mtrs Deviation

298

Track 295

294

Track 281

280

Dynamic Satellite Surveys

TRACE DIAGRAM

DSS-FF-07
REV 8.0
August 2004

LINE: BE08-15

PROJECT/JOB # 08061 CLIENT Terrex/Blue Energy

PAGE 4 OF 4 AREA: Injune STN INTERVAL: 20 m SHOT INTERVAL: _____ m

FROM STN 201 TO STN 851 SHOOTING DIRECTION: North to South BEARING: _____ °

Trees 270 - 257

Boundary Fence 235

234

Access through gate 400m east

Main road 234 - 233 HAND CARRY

Boundary Fence 233 Fence may be dropped...

232

Alternate Access 850m west along road through gate and follow fenceline beside road

201 EOL

Chronological Summary

Chronological Summary

DATE	***OPERATIONS***
16th October	One-person Survey Crew mobilised from Yeppoon to Injune.
17th October	Located Base and commenced pegging with two offsiders.
18th October	Pegging continued with two offsiders.
19th October	Pegging continued with two offsiders.
20th October	Pegging with two offsiders, and finished survey.

