

AUSTHAI GEOPHYSICAL CONSULTANTS LIMITED

Teak Tree Audit Report

Conducted For

Asia Teak Group

At

U-Thong Estate, Suphanburi Province

Chon Daen Estate, Phetchabun Province

Thailand

February 2016

Tree Audit Report

Date: 8 – 9 February 2014

Area 1: U-Thong plantation, Thailand.

1. U-Thong 2 – Block 1, located at N14.44008/E99.85665
2. U-Thong 2 – Block 2, located at N14.43884/E99.85629
3. U-Thong 2 – Block 3, located at N14.43898/E99.85652
4. U-Thong 3, located at N14.44287/E99.85392
5. U-Thong 4, located at N14.44125/E99.85638

Date: 10 – 11 February 2014

Area 2: Chon Dan plantation, Thailand.

1. Chon Dan1, located at N16.15928/E100.84883
2. Chon Dan2, located at N16.16283/E100.85193
3. Chon Dan3, located at N16.16239/E100.85226
4. Chon Dan4, located at N16.15803/E100.85280
5. Chon Dan5, located at N16.15730/E100.85362
6. Chon Dan6, located at N16.15696/E100.85129
7. Chon Dan7, located at N16.15687/E100.85425
8. Chon Dan8, located at N16.15451/E100.85524
(Remark; Location is in Lat/Long)

Audit teams consist of:

- Asia Teak Team:
 1. JMP Jayalath
 2. Eranda Rathnamalala
 3. Tom Rossiter
- Thai Orchids Lab Team:
 1. Field Officer
 2. Field worker
- Austhai Geophysics Team
 1. Juthamard Mhardsen
 2. Cheranun Kaewku
 3. Nitisart Wongchai

Audit procedure:

1. Full tree count to be recorded against the current grid mapping and identified on the record as follows.

- a) Tree present: ✓
- b) Tree not present : ✕
- c) Very poor, small tree to be removed and Tree designated for retention by TOL: S

The data of both areas present on table 1.

Comparison Tree Audit 2014 and 2016

Estate Name	Block Number	Geophysics Count Trees 2014			Geophysics Count Trees 2016			Geophysics Count Trees 2016
		Total Good Trees	Small/Poor Trees	Total trees	Total Good Trees	Small/Poor Trees	Total trees	
U - THONG	U Thong2 - 1	746	47	793	624	6	630	163
	U Thong2 - 2	1,678	60	1,738	1,277	104	1,381	357
	U Thong2 - 3	981	21	1,002	735	117	852	150
	U Thong3	1,581	76	1,657	753	3	756	901
	U Thong4	436	19	455	316	48	364	91
	Total All Blocks	5,422	224	5,646	3,705	278	3,983	1663
CHON DAN	1	3,684	253	3,937	3,160	9	3,169	768
	2	264	22	286	260	0	260	26
	3	1,261	57	1,318	1,218	2	1,220	98
	4	2,874	119	2,993	2,540	15	2,555	438
	5	351	9	360	292	0	292	68
	6	1,202	81	1,283	1,144	0	1,144	139
	7	1,816	83	1,899	1,486	2	1,488	411
	8	1,036	121	1,157	822	59	881	276
	Total All Blocks	12,488	745	13,233	10,922	87	11,009	2,224
Total	All plantations in Thailand	17,910	969	18,879	14,627	365	14992	3,887

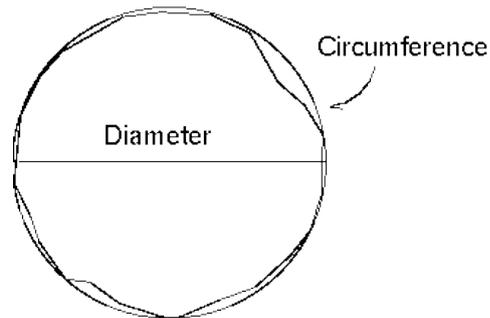
Table 1: Comparison Tree Audit 2014 and 2016

2. Sample plot Data Collection

2.1 Diameter at Breast Height (DBH)

Diameter Tape

Diameter tapes are the most common diameter measurement tool. It is a flexible tape which is used to measure circumference, but reads in units of diameter (*Figure 1*).



(*Figure 1. Diagram of measuring diameter with a diameter tape.*)

This conversion is accomplished by dividing the circumference by π (3.1415).

$$D = \frac{C}{\pi}$$

where D is the diameter, C is the circumference and π is (3.1415).

Diameter should be measured every tree in sample plot excluding trees not present, small/poor trees, using diameter tape (*Figure 2*) at the 1.3 m. height from the ground.



(*Figure 2. diameter tape*)

The data of both areas present on table 2, 3.

Comparison Diameter at Breast Height 2015 - 2016

Estate	Block no.	Plot No.	2015					2016				
			No. of trees measured	Average DBH (cm)	Variance in DBH 2015 vs. 2016	Average GBH (cm)	Variance in GBH 2014 vs. 2015	No. of trees measured	Average DBH (cm)	Variance in DBH 2015 vs. 2016	Average GBH (cm)	Variance in GBH 2014 vs. 2015
U-Thong - 02	1	Block Average	52	21.2	3.0	66.6	9.4	51	21.7	0.53	68.25	1.65
	2	Block Average	131	20.7	1.7	65.1	5.4	113	22.0	1.27	69.08	3.98
	3	Block Average	67	21.8	2.2	68.6	6.8	67	22.7	0.85	71.28	2.68
	Avg	Block Average	-	21.3	2.3	66.8	7.2	-	22.1	0.88	69.54	2.77
U-Thong - 03	4	Block Average	81	19.7	2.3	61.9	7.4	70	20.1	0.37	63.05	1.15
U-Thong - 04	5	Block Average	59	19.4	0.9	60.8	2.8	49	20.1	0.71	63.03	2.23
Estate Average			-	20.6	2.1	65.0	6.5	-	21.3	0.74	66.94	1.98
Total			390					350				

Table2: Comparison diameter at breast height 2015 and 2016 in U-Thong estate.

Estate	Block no.	Plot No.	2015					2016				
			No. of trees measured	Average DBH (cm)	Variance in DBH 2015 vs. 2016	Average GBH (cm)	Variance in GBH	No. of trees measured	Average DBH (cm)	Variance in DBH 2015 vs. 2016	Average GBH (cm)	Variance in GBH
Chon Dan	1	Block Average	300	20.6	0.80	64.8	2.5	294	20.7	0.11	65.15	0.35
	2	Block Average	36	19.0	0.88	59.6	2.8	36	18.9	(0.06)	59.42	(0.18)
	3	Block Average	140	19.5	0.30	61.1	0.9	139	19.5	0.08	61.36	0.26
	4	Block Average	246	21.3	1.81	67.0	5.7	246	21.5	0.20	67.64	0.64
	5	Block Average	31	21.2	1.38	66.5	4.3	31	21.5	0.36	67.63	1.13
	6	Block Average	127	20.4	1.52	64.0	4.8	127	20.5	0.16	64.50	0.50
	7	Block Average	175	20.8	2.19	65.2	6.9	174	21.1	0.32	66.20	1.00
	8	Block Average	113	24.4	2.14	76.5	6.7	112	24.7	0.31	77.46	0.96
Estate Average			-	20.89	1.38	65.59	4.32	-	21.1	0.19	66.17	0.58
Total			1168					1159				

Table3: Comparison diameter at breast height 2015 and 2016 in Chon Dan estate

Appendix



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260
Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at U-Thong Plantation Thailand

Section number & Subsection: U-Thong02 B1 Date of data collection: 08 Feb 2016

Start location: South of Row A

End location: North of Row BT

Person completing this form: Juthamard Mhardsen Contact number: + 668 678 44 112

Other team members: Cheranun Kaewku and Nittsart Wongchai

Trees Count Detail: Physical tree count = 624

Small size and Damage tree count = 6

Number of teak trees: 630

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

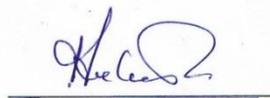
Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

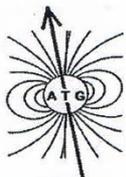

(Austhai Geophysical Consultants)

Date: 08/02/2016


(Asia Teak Supervisor)

Date: 08/02/2016

Figure 1: Field report at U-Thong 02 block 01



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at U-Thong Plantation Thailand

Section number & Subsection: U-Thong02 B2 Date of data collection: 08 Feb 2016

Start location: North of row AI

End location: South of row A and BA

Person completing this form: Juthamard Mhardsen Contact number: +6687844112

Other team members: Cheranun Kaewku and Nitisart Wongchai

Trees Count Detail: Physical tree count = 1277

small size and Damage tree count = 104

Number of teak trees: 1381

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

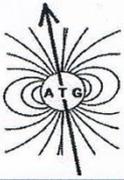
(Austhai Geophysical Consultants)

Date: 8/02/2016

(Asia Teak Supervisor)

Date: 8/02/2016

Figure 2: Field report at U-Thong 02 block 02



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at U-Thong Plantation Thailand

Section number & Subsection: U-Thong 02 B3 Date of data collection: 09 Feb 2016

Start location: south of Row A

End location: south of Row CB

Person completing this form: Juthamard Mhardsen Contact number: +66867844112

Other team members: _____

Eranda and Jayalath

Trees Count Detail: Physical tree count = 735

small size and Damage tree count = 117

Number of teak trees: 852

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

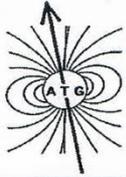
(Austhai Geophysical Consultants)

Date: 9/2/2016

(Asia Teak Supervisor)

Date: 9/2/2016

Figure 3: Field report at U-Thong 02 block 03



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at U-Thong Plantation Thailand

Section number & Subsection: U-Thong 03 Date of data collection: 09 Feb 2016

Start location: South of Row CG

End location: North of Row A

Person completing this form: Juthamard Mardsen Contact number: +66867844112

Other team members: _____

Eranda

Trees Count Detail: Physical tree count = 753

Small size and Damage tree count = 3

Number of teak trees: 756

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

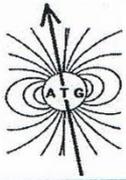
(Austhai Geophysical Consultants)

Date: 9 / 2 / 2016

(Asia Teak Supervisor)

Date: 9 / 2 / 2016

Figure 4: Field report at U-Thong 03



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at U-Thong Plantation Thailand

Section number & Subsection: U-Thong 04 Date of data collection: 09 Feb 2016

Start location: South of Row A

End location: North of Row AU

Person completing this form: Juthamard Mhardsen Contact number: +66267894112

Other team members: _____

Jayalath

Trees Count Detail: Physical count = 316

small size and damage tree count = 48

Number of teak trees: 364

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

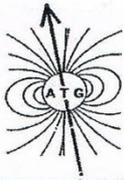

(Austhai Geophysical Consultants)

Date: 09/2/2016


(Asia Teak Supervisor)

Date: 09/2/2016

Figure 5: Field report at U-Thong 04



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B1 Date of data collection: 10,11 Feb 2016
Start location: South of Raw X
End location: South of Raw Ck
Person completing this form: Juthamard Mhardsen Contact number: +66 867844112
Other team members: Chonnan K...

Franda

Trees Count Detail: Physical tree count = 3,160
Small size and Damage tree count = 9

Number of teak trees: 3,169

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

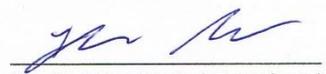
Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

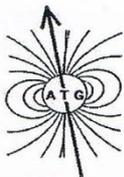

(Austhai Geophysical Consultants)

Date: 11 /02/ 2016


(Asia Teak Supervisor)

Date: 11 /02/ 2016

Figure 6: Field report at Chon Dan 01 block 01



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B 2 Date of data collection: 10 Feb 2016

Start location: South of Row A

End location: North of Row 2

Person completing this form: Juthamard Mardson Contact number: +66 867 844112

Other team members: Jayalatt

Trees Count Detail: Physical trees count = 260 *Small size and Damage*

Small size and Damage trees count = 0

Number of teak trees: 260

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

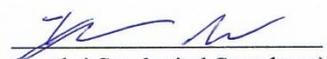
Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

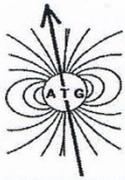

(Austhai Geophysical Consultants)

Date: 10 / 02 / 2016


(Asia Teak Supervisor)

Date: 10 / 02 / 2016

Figure 7: Field report at Chon Dan 01 block 02



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B3 Date of data collection: 10 Feb 2016
Start location: South of Row B
End location: South of Row AJ
Person completing this form: Cheranun Kaewku Contact number: +66887481470
Other team members: Nitisart Nongchai

Trees Count Detail: Physical tree count = 1,218
Small size and Damage tree count = 2

Number of teak trees: 1,220

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

Cheranun Kaewku
(Austhai Geophysical Consultants)

Date: 10 /02/ 2016

[Signature]
(Asia Teak Supervisor)

Date: 10 /02/ 2016

Figure 8: Field report at Chon Dan 01 block 03



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260
Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B4 Date of data collection: 10 Feb 2016
Start location: North of Row B
End location: South of Row BC
Person completing this form: Juthamard Mhardsen Contact number: +66867844112

Other team members: _____
Jayalath

Trees Count Detail: Physical trees counts = 2,540
Small size and Damage tree count = 15

Number of teak trees: 2,555

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

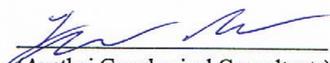
Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____


(Austhai Geophysical Consultants)

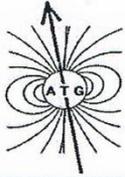
Date: 10/02/2016



(Asia Teak Supervisor)

Date: 10/02/2016

Figure 9: Field report at Chon Dan 01 block 04



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B5 Date of data collection: 10 Feb 2016
Start location: South of Row A
End location: North of Row A3
Person completing this form: Juthamard Mhardsen Contact number: +66867844112
Other team members: Jayalalt

Trees Count Detail: Physical tree count = 292
Small size and Damage trees count = 0

Number of teak trees: 292

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

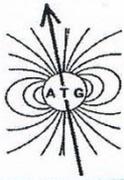
(Austhai Geophysical Consultants)

Date: 10/02/2016

(Asia Teak Supervisor)

Date: 10/02/2016

Figure 10: Field report at Chon Dan 01 block 05



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan Bc Date of data collection: 10,11 Feb 2016
Start location: South of Raw A
End location: South of Raw Ax
Person completing this form: Nitsart Nongchai Contact number: +66 89 622 2733

Other team members: _____
Cheranon Kaewku

Trees Count Detail: Physical tree count = 1,144
Small size and Damage tree count = 0

Number of teak trees: 1,144

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

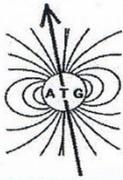
Nitsart Nongchai
(Austhai Geophysical Consultants)

Date: 11/02/2016

[Signature]
(Asia Teak Supervisor)

Date: 11/02/2016

Figure 11: Field report at Chon Dan 01 block 06



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B7 Date of data collection: 11 Feb 2016

Start location: North of Raw D

End location: South of Raw BF

Person completing this form: Juthamard Mhardsen Contact number: +66867844112

Other team members: _____

Jayalatt

Trees Count Detail: Physical tree counts = 1,486

Small size and Damage tree counts = 2

Number of teak trees: 1,488

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____

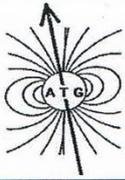

(Austhai Geophysical Consultants)

Date: 11 /02/ 2016


(Asia Teak Supervisor)

Date: 11 /02/ 2016

Figure 12: Field report at Chon Dan 01 block 07



Austhai Geophysical Consultants (Thailand) Co., Ltd.

4th Floor, RM 403, 40 Soi Sukhumvit 62 Sukhumvit Rd., Bangjak, Prakanong, Bangkok Thailand 10260

Tel. +66 (0) 2741 6403 Fax +66 (0) 2741 6403 www.austhaigeophysics.com

Teak Tree Count Report at Chon Dan Plantation Thailand

Section number & Subsection: Chon Dan B8 Date of data collection: 11 Feb 2016

Start location: South of Raw A

End location: South of Raw CL

Person completing this form: Juthamard Mhardsen Contact number: +66867844112

Other team members: _____

Trees Count Detail: Physical tree count = 822

Small size and Damage tree count = 59

Number of teak trees: 881

Estimate of trail distance with visibility less than 15 ft. on each side:

_____ % on right _____ % on left

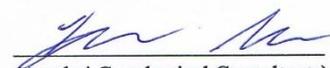
Estimate of average visible distance from trail where less than 15 ft.

_____ ft. to right _____ ft. to left

Direction of travel for above estimates: _____ South to North

_____ North to South

Other observations: _____


(Austhai Geophysical Consultants)

Date: 11/02/2016


(Asia Teak Supervisor)

Date: 11/02/2016

Figure 13: Field report at Chon Dan 01 block 08