

ORC Evidence Requirements for the Citrus Industry

The Citrus Industry Owner Reimbursement Costs (ORC) Evidence Framework only applies to Owners from the Citrus Industry.

ORCs for the Citrus Industry are calculated using the formula for Perennial Trees (*Schedule 6, Part 4.4.13 of the Emergency Plant Pest Response Deed, 2015*). This formula is: $ORC = (A - B) + C + D + E + F + G + H + I$.

A definition for each component of this formula is provided in the following table.

Regional differences will need to be taken into account throughout the Evidence Framework.

Revision history

Version	Date issued	Amendment Details	
		Element(s)	Details
Draft	Draft	All	Full revision of 2007 draft. Provided to Citrus Australia for consideration and approval. Provided to government Parties for endorsement 23 July 2015.
1.0	26 Nov 2015	All	Endorsed by Citrus Australia, all government Parties and PHA Board.

	Definition of Elements from the EPRD	Evidence requirements (in hierarchical order)	Additional Information
A	Loss of profit from the current Crop destroyed = a * y * p		
	a = area of tree Crop destroyed.	<p>Certification/assessment of the area of Crop destroyed by an Authorised Person using one of the following methods:</p> <ol style="list-style-type: none"> 1. Accurate property maps. 2. Satellite imagery. This will depend on the specific jurisdiction's capacity to access such information. 3. Aerial photographs. This will depend on the specific jurisdiction's capacity to access such information. 4. On ground surveys will be conducted using GPS data if the previous options are not available at the time of incursion and Crop destruction. 	<ul style="list-style-type: none"> • An on the ground survey, including a tree count and variety confirmation will be required to verify the type of Crop being destroyed at the time of the incursion. This will be carried out by an Authorised Person. • The jurisdictional legislative instrument (by whatever name) will identify the quarantine zone, and the Lead Agency must hold appropriate records of the area of Crop destroyed.
	<p>y = expected yield based on Owners' past records, taking into account any biennial bearing patterns. In particular, Owners claiming above average yields (and prices) must produce auditable records of above average returns in previous years to justify additional amounts in Owner Reimbursement Costs.</p> <p>If the Owner has no records, the regional average for that Crop is to be used.</p>	<p>Certification/assessment of the yield by variety and by age of tree by an Authorised Person using one of the following methods:</p> <ol style="list-style-type: none"> 1. Actual yield determined by harvesting the Crop. 2. Expected yield for the current season calculated for the individual Owner: <ol style="list-style-type: none"> a) from their auditable historical yield data averaged over 4 years; or b) by frame counts relevant to the variety compared; or c) by fruit size measurements relevant to the variety compared to the average fruit size measurements for the variety. 3. Packer/processor records for the appropriate varieties. If records for the appropriate varieties are not available averages of packer/processor yield records will be used. 4. Local area/regional average for the varieties used by the Owner, averaged over 4 years. <p>For new plantings without comparable Crop records, the regional average for the first commercial Crop will be used.</p>	<ul style="list-style-type: none"> • The 4 year average takes the fluctuating yield cycle into account. • Packer records are independent. In situations where the packer owns an affected Crop, past records will need to be independently verified through the assessment process. • The Owner will need to source and authorise the release of past data from the packer. The information would be used only for this purpose. • New property Owners will need to obtain permission from previous owners for packer data release. • Need to take into account the age of the trees when determining averages. • Local area/regional average should be calculated by referring to yield records from Owners in that local area/region where available.
	p = market price at farm gate at harvest	<ol style="list-style-type: none"> 1. If there is a contract price in place this will be used for 	<ul style="list-style-type: none"> • There are a range of processes available

	Definition of Elements from the EPPRD	Evidence requirements (in hierarchical order)	Additional Information
	time	<p>Crops applicable under the contract. This will be adjusted, according to the contract terms, using the quality and grading values of the previous season if required. These records are typically kept by Owners and processors.</p> <ol style="list-style-type: none"> 2. If there is no contract price in place, the price paid for the current Crop will be sourced from regional packer/processor records for the current season. 3. If there are no records for the price paid in the current season available, the price paid will be sourced from regional packer/processor records from the previous season. 4. If regional packer/processor records are not available, market price will be calculated for the individual Owner from their auditable historical records for the previous season. 5. In the absence of auditable records, verifiable regional averages from an appropriate market source will be determined at the time of the incursion. 	<p>to Owners for selling products. Owners may choose to:</p> <ul style="list-style-type: none"> ○ pick and pack their own produce; ○ pick and then send their produce to a packing house; ○ have direct contact with retailers; or ○ sell through a merchant/agent. <ul style="list-style-type: none"> ● All prices should be measured at farm gate. ● Prices will need to consider the variability in the quality of fruit taken from historical records of quality and grading values for previous seasons.
B	Harvesting costs based on 'best practice' as estimated by State/Territory departments of agriculture, plus any other costs (such as watering or pruning costs) normally associated with Crop production between the time of tree destruction and harvest.	<p>Best practice harvest and production costs will be determined by State/Territory Agriculture Departments in consultation with Relevant Parties using applicable local contract prices and in accordance with <i>Appendix 1: Schedule of costs for B, C and E – normal production and harvesting costs, based on 'best practice' incurred by the Owner.</i></p> <p>Where an Owner has auditable records to support a different gross margin (possibly due to different harvesting methods or systems) specific reference to an Owner's individual gross margin will be used as appropriate.</p>	
C	Direct costs associated with the Response Plan incurred by the Owner but not normally incurred as a production expense.	<p>This will depend on what the Response Plan requires and will need to be calculated on an Incident by Incident basis.</p> <p>A standard schedule of regional gross margins will be used to estimate normal costs based on standard local or regional contract prices as appropriate. This will be determined by State/Territory Agriculture Departments in consultation with Relevant Parties and in accordance with <i>Appendix 1: Schedule of costs for B, C and E – normal production and harvesting costs, based on 'best practice' incurred by the Owner.</i></p> <p>Where an Owner has auditable records to support a different</p>	<ul style="list-style-type: none"> ● Required actions/treatments by Owners need to be specifically defined in a Response Plan. ● The legislative order needs to specify the actions/treatments required by the Owner.

	Definition of Elements from the EPPRD	Evidence requirements (in hierarchical order)	Additional Information
		<p>gross margin specific reference to an Owner's individual gross margin will be used as appropriate.</p> <p>A schedule of costs additional to those specified in Appendix 1 that are required of the Owner by the Response Plan will be developed by the Lead Agency in consultation with Relevant Parties at the time of the Incident.</p>	
D	<p>Replacement value of any capital items destroyed as part of the Response Plan.</p> <p>If there is an opportunity following the Response Plan for modernising or upgrading the orchard – for example, closer tree plantings, more expensive varieties, or trellis plantings, the level of Owner Reimbursement Costs is to be related strictly to replacing the asset that was there. If an Owner wants to introduce more technology or better infrastructure, for example, the Owner must cover any additional costs.</p>	<p>Replacement value of any capital items destroyed will depend on what the Response Plan requires and will need to be calculated on an Incident by Incident basis.</p> <p>Prices will be sourced from specialist suppliers at the time of the Incident. Costs are to be determined in accordance with a schedule of market values for items expected to be destroyed, replacing like with like, and agreed by Relevant Parties at the time of developing a Response Plan.</p>	<ul style="list-style-type: none"> • The legislative order needs to identify the item requiring destruction. • Known capital items requiring destruction need to be specified in a Response Plan. • However, some items cannot be replaced until the fallow period ends. The price of these items is likely to increase during the fallow period. As such, an appropriate rate of input price inflation must be determined and applied to these prices. Subsequent values are then depreciated. • Replacement value of any capital items destroyed as an unintended consequence of an eradication program need to be included in this element, but will not necessarily be specified in the Response Plan. Unintended destruction of capital items will be dealt with on an Owner-by-Owner basis. • Capital items for citrus orchards could potentially include: <ul style="list-style-type: none"> ○ Harvest bins ○ Picking bags ○ Irrigation lines ○ Protective covers and support structures.
E	<p>Loss of net profits for any fallow period required by a Response Plan.</p> <p>Net profit is to be standardised based on regional gross margins calculations for</p>	<p>A standard schedule of regional gross margins will be used to estimate costs based on best practice. This will be determined by State/Territory Agriculture Departments in consultation with Relevant Parties and in accordance with <i>Appendix 1: Schedule</i></p>	<ul style="list-style-type: none"> • A Response Plan fallow is a compulsory non-productive time an Owner would not normally experience. If a period of fallow is not required by the Response Plan, "E"

	Definition of Elements from the EPPRD	Evidence requirements (in hierarchical order)	Additional Information
	the Crop in question by State/Territory departments of agriculture.	<p><i>of costs for B, C and E – normal production and harvesting costs, based on ‘best practice’ incurred by the Owner.</i></p> <p>Where an Owner has auditable records to support a different gross margin (possibly due to different production methods or systems) specific reference to an Owner’s individual gross margin will be used as appropriate. The assumptions used in developing the gross margins will have to be considered when referring to them (e.g. age of planting, planting density).</p>	<p>will not be included as part of the ORC assessment.</p> <ul style="list-style-type: none"> • In situations where trees of different ages are destroyed, the different ages will be taken into account when calculating “E”. • The primary goal should be to reduce the costs of the response to all Parties including the Affected Parties. There needs to be a mechanism to enable people to remain productive when there is an incursion. An alternative crop could be considered by Owners, as the first option to enable them to remain productive. Where the response allows, suitable alternative crops will be identified and income from the crop deducted from the amount payable for a compulsory fallow.
F	Tree destruction costs ‘depreciated’ depending on the age of the orchard in relation to a standardised period of rotation for the tree Crop in question. Depreciation is to be based on a straight line method between full cost reimbursement at the beginning of commercial production of the rotation and the end of the rotation.	<p>Costs to be determined in accordance with <i>Appendix 2: Schedule of costs for F – Tree destruction costs</i> and based on best practice and applicable contract prices.</p> <p>The standard period of rotation is to be considered as:</p> <ul style="list-style-type: none"> • Oranges (Navels & Valencia) = 35 years; • Mandarins = 20 years; • Grapefruit = 20 years; and • Lemons & Limes = 20 years <p>unless an Owner can provide evidence of a different intention.</p>	<ul style="list-style-type: none"> • Normally, destruction will be carried out by the Lead Agency and not included as part of the ORC calculation. • If the rotation period differs from the standard the Owner will need to provide sufficient evidence to the Authorised Person for verification. Evidence may take the form of historical planting records or future planting plans for the orchard.
G	‘Depreciated’ tree replanting costs as for tree destruction costs. If there is an opportunity following the Response Plan for modernising or upgrading the orchard – for example, closer tree plantings, more expensive varieties, or trellis plantings, the level of Owner Reimbursement Costs is to be related strictly to replacing the asset that was there. If an Owner wants to introduce more technology or better infrastructure,	<p>Costs are to be determined in accordance with <i>Appendix 3: Schedule of costs for G – Tree replanting costs</i>.</p> <p>Standard costs will apply for the region as agreed by the Relevant Parties.</p>	<ul style="list-style-type: none"> • This cost is for replacing like with like. If the Owner would like to take the opportunity to make changes to orchard design or modernise/upgrade the orchard, then the additional expense will be covered by the Owner. • Costs are typically calculated on a tree by tree basis, for a hectare of trees, or part of a hectare and based on best practice. • Trees used for replanting would typically

	Definition of Elements from the EPPRD	Evidence requirements (in hierarchical order)	Additional Information
	for example, the Owner must cover any additional costs.		be 12 – 24 months old at time of planting.
H	'Depreciated' loss of profit during the non-bearing period of immature trees.	The yield curve and the comparative gross margin will be used to determine this loss. The yield curve values can be found in <i>Appendix 4: Yield curves for main citrus varieties</i> .	<ul style="list-style-type: none"> The need for complete removal of old trees and site preparation may prolong the lag time to an appropriate planting window or season and delay the time taken for trees to bear fruit. This should be considered when calculating the loss during the non-bearing period of immature trees.
I	Value of any stored produce on farm destroyed as a directive of the Response Plan including seed or nuts — as for annual broadacre Crops.	This will depend on what the Response Plan requires and will be calculated on an Incident by Incident basis. Price and yield to be determined using the applicable method as described in "A". The amount of any stored produce will be determined by inspection at the time of the Incident.	<ul style="list-style-type: none"> Legal transfer of ownership of fruit will vary with arrangements between an Owner and any intermediary. The Owner sells on consignment and does not get paid until the product is sold at the end point. If selling to a processor, that is the endpoint and the grower relinquishes ownership of the fruit on delivery. ORCs will apply when any fruit destroyed is still owned by the grower.

Citrus ORC Evidence Framework - Notes

**Date appendices developed:
December 2014**

This Evidence Framework is structured to be consistent with the Guidelines for Owner Reimbursement Costs, with the following Appendices relating to the evidence required in the framework

Formula Input:	Description and relevant appendix
A	Loss of profit from current crop destroyed, based on area, yield and price. Examples of yield for key citrus crops are included in Appendix 1.2, 1.4 and 4.
B	Harvesting costs, including production costs. Examples for Navels and Mandarins are included in Appendices 1.1 to 1.4.
C	Direct costs associated with Response Plan. Information for mature crops can be taken from Appendices 1.1 and 1.3, with additional costs to be included on a case by case basis.
D	Replacement costs of capital items, to be determined on a case by case basis during response.
E	Loss of net profit during any enforced fallow period. Information can be taken from Appendices 1.1 to 1.4.
F	Tree destruction costs, information included in Appendix 2.
G	Replanting costs, included in Appendix 3.
H	Related to loss of profit during non-bearing period, and can be taken from Appendices 1.2, 1.4 and 4.
I	Value of any stored product, taken from grower's own information if applicable during a Response Plan.

Disclaimer

Information in the framework has been prepared as a guide to assessing Owner Reimbursement Costs in the case of a Response Plan. Based on the evidence hierarchy, these Appendices are used only where verifiable records are not available. Nothing in this framework indicates a minimum payment to growers, or any responsibility on the part of Citrus Australia, Plant Health Australia or other signatories to the EPPRD to pay growers the estimated costs.

APPENDIX 1: Schedule of Costs for B, C and E - normal production and harvesting costs, based on 'best practice' incurred by the Owner

Appendix 1 includes:

Appendix 1.1: Gross margins - Navel oranges, southern Australia

Appendix 1.2: 35 year projections - Navel oranges, southern Australia

Appendix 1.3: Gross margins - Mandarins, southern Australia

Appendix 1.4: 20 year projections - Mandarins, southern Australia

APPENDIX 1.1: Gross Margin for Mature Navel Orange Crop

NOTE: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be reviewed and updated by agreement of the Relevant Parties to allow current and case specific information to be used.

DESCRIPTION	
Crop:	Navel Orange
Area:	1 hectare
Location:	Southern Australia

INCOME:	
Assume 35 tonnes @ \$350	12,250

PRODUCTION COSTS	
Pruning & Hand Thinning	750
Wages Spraying / Slashing	350
Irrigation R&M	150
Wages Irrig / Drainage / Fert	300
Water Rates	350
Fuel & Electricity Costs	1,100
Contract Pest services	100
Fertiliser	550
Fungicide / Insecticide	300
Crop Regulation	250
Weed Control	100
General R&M	200
Lease-Plant & Equip	400
Subtotal (Production)	4,900

Harvesting (@\$80.00/tonne)	2,800
Levies (@\$6.00/tonne)	210
General Overhead Cost	1,000

Total Production	8,910
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GM Per Hectare	3,340
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Appendix 1.2: 35 year projections - Navel oranges, southern Australia

Appendix 1.3: Gross margins - Mandarins, southern Australia

Appendix 1.4: 20 year projections - Mandarins, southern Australia

APPENDIX 1.2: 35 Year projections for Mature Navel Orange Crop

NOTE: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be reviewed and updated by agreement of the Relevant Parties to allow current and case specific information to be used.

Crop:	Navel Orange
Area:	1 hectare
Location:	Southern Australia

YEAR	0	1	2	3	4	5	6	7	8	9	10	11 - 35
YIELD (TONNES/HECTARE)	0	0	0	2	6	11	16	22	28	32	35	35
PRICE	350	350	350	350	350	350	350	350	350	350	350	350
INCOME	0	0	0	700	2,100	3,850	5,600	7,700	9,800	11,200	12,250	12,250

DEVELOPMENT COSTS (refer to Annex 4 - Replanting Costs)

Subtotal	15,685											
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PRODUCTION COSTS

Pruning & Hand Thinning	0	1,500	375	450	525	600	675	750	750	750	750	750
Wages Spraying / Slashing	0	175	175	210	245	280	315	350	350	350	350	350
Irrigation R&M	0	75	75	90	105	120	135	150	150	150	150	150
Wages Irrig / Drainage / Fert	0	150	150	180	210	240	270	300	300	300	300	300
Water Rates	0	175	175	210	245	280	315	350	350	350	350	350
Fuel & Electricity Costs	0	550	550	660	770	880	990	1,100	1,100	1,100	1,100	1,100
Contract Pest services	0	50	50	60	70	80	90	100	100	100	100	100
Fertiliser	0	275	275	330	385	440	495	550	550	550	550	550
Fungicide / Insecticide	0	150	150	180	210	240	270	300	300	300	300	300
Crop Regulation	0	125	125	150	175	200	225	250	250	250	250	250
Weed Control	0	50	50	60	70	80	90	100	100	100	100	100
General R&M	0	100	100	120	140	160	180	200	200	200	200	200
Lease-Plant & Equip	0	200	200	240	280	320	360	400	400	400	400	400
Subtotal (Production)	0	3,575	2,450	2,940	3,430	3,920	4,410	4,900	4,900	4,900	4,900	4,900
Harvesting (@ \$80.00/tonne)	0	0	0	160	480	880	1,280	1,760	2,240	2,560	2,800	2,800
Levies (@ \$6.00/tonne)	0	0	0	12	36	66	96	132	168	192	210	210
General Overhead Cost	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total Production	16,685	4,575	3,450	4,112	4,946	5,866	6,786	7,792	8,308	8,652	8,910	8,910
GM Per Hectare	-\$16,685	-\$4,575	-\$3,450	-\$3,412	-\$2,846	-\$2,016	-\$1,186	-\$92	\$1,492	\$2,548	\$3,340	\$3,340

APPENDIX 1: Schedule of Costs for B, C and E - normal production and harvesting costs, based on 'best practice' incurred by the Owner

Appendix 1 includes:

Appendix 1.1: Gross margins - Navel oranges, southern Australia

Appendix 1.2: 35 year projections - Navel oranges, southern Australia

Appendix 1.3: Gross margins - Mandarins, southern Australia

Appendix 1.4: 20 year projections - Mandarins, southern Australia

APPENDIX 1.3: Gross Margin for Mature Mandarin Crop

NOTE: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be reviewed and updated by agreement of the Relevant Parties to allow current and case specific information to be used.

DESCRIPTION	
Crop:	Mandarins
Area:	1 hectare
Location:	Southern Australia

INCOME:	
Assume 45 tonnes @ \$500	22,500

PRODUCTION COSTS	
Pruning & Hand Thinning	1,400
Wages Spraying / Slashing	350
Irrigation R&M	150
Wages Irrig / Drainage / Fert	300
Water Rates	350
Fuel & Electricity Costs	1,100
Contract Pest services	100
Fertiliser	550
Fungicide / Insecticide	300
Crop Regulation	250
Weed Control	100
General R&M	200
Lease-Plant & Equip	400
Subtotal (Production)	5,550

Harvesting (@\$175.00/tonne)	7875
Overhead Cost	1000
Levies (@\$6.00/tonne)	270

Total Production	14,695
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GM Per Hectare	7,805
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APPENDIX 1: Schedule of Costs for B, C and E - normal production and harvesting costs, based on 'best practice' incurred by the Owner

Appendix 1 includes:

Appendix 1.1: Gross margins - Navel oranges, southern Australia

Appendix 1.2: 35 year projections - Navel oranges, southern Australia

Appendix 1.3: Gross margins - Mandarins, southern Australia

Appendix 1.4: 20 year projections - Mandarins, southern Australia

APPENDIX 1.4: 20 Year Projections for Mature Mandarin Crop

NOTE: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be reviewed and updated by agreement of the Relevant Parties to allow current and case specific information to be used.

Crop:	Mandarins
Area:	1 hectare
Location:	Southern Australia

YEAR	0	1	2	3	4	5	6	7	8	9	10	11 - 20
YIELD (TONNES/HECTARE)	0	0	1	5	10	15	20	25	30	35	40	45
PRICE	500	500	500	500	500	500	500	500	500	500	500	500
INCOME	0	0	500	2,500	5,000	7,500	10,000	12,500	15,000	17,500	20,000	22,500

DEVELOPMENT COSTS (Refer to Annex 4)												
Subtotal	20,025											

PRODUCTION COSTS												
Pruning & Hand Thinning	0	1,400	1,000	1,000	1,200	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Wages Spraying / Slashing	0	175	175	210	245	280	315	350	350	350	350	350
Irrigation R&M	0	75	75	90	105	120	135	150	150	150	150	150
Wages Irrig / Drainage / Fert	0	150	150	180	210	240	270	300	300	300	300	300
Water Rates	0	175	175	210	245	280	315	350	350	350	350	350
Fuel & Electricity Costs	0	550	550	660	770	880	990	1,100	1,100	1,100	1,100	1,100
Contract Pest services	0	50	50	60	70	80	90	100	100	100	100	100
Fertiliser	0	275	275	330	385	440	495	550	550	550	550	550
Fungicide / Insecticide	0	150	150	180	210	240	270	300	300	300	300	300
Crop Regulation	0	125	125	150	175	200	225	250	250	250	250	250
Weed Control	0	50	50	60	70	80	90	100	100	100	100	100
General R&M	0	100	100	120	140	160	180	200	200	200	200	200
Lease-Plant & Equip	0	200	200	240	280	320	360	400	400	400	400	400
Subtotal (Production)	0	3,475	3,075	3,490	4,105	4,720	5,135	5,550	5,550	5,550	5,550	5,550
Harvesting (@\$175.00/tonne)	0	0	175	875	1,750	2,625	3,500	4,375	5,250	6,125	7,000	7,875
Levies (@\$6.00/tonne)	0	0	6	30	60	90	120	150	180	210	240	270
General Overhead Cost	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total Production	21,025	4,475	4,256	5,395	6,915	8,435	9,755	11,075	11,980	12,885	13,790	14,695
GM Per Hectare	-\$21,025	-\$4,475	-\$3,756	-\$2,895	-\$1,915	-\$935	\$245	\$1,425	\$3,020	\$4,615	\$6,210	\$7,805

APPENDIX 2: Schedule of costs for F - Tree destruction costs

NOTE: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be determined by agreement of the Relevant Parties to allow current and case specific information to be used.

(Information in this Appendix is adapted from the Cherry ORC Framework)

Cost	Rationale	Hours	Total	Comments
<i>Tree Removal Options</i>				
\$90/hr	Tree 1 – 3 years Bobcat	20	\$1,800	Root growth allows for smaller equipment
\$125/hr	Tree 3 – 6 years Excavator with a grab	20	\$2,500	Can be removed with a grab and windrowed
\$140/hr	Tree 7+ – Dozer	12	\$1,680	Larger tree require larger equipment
\$140/hr	Tree 7+ – Forestry Flail	15	\$2,100	Mulches and remove trees in one process stumps and roots down to 6 cm
<i>Other Tree Removal Costs</i>				
\$110/Ha	Tractor stick racks	10	\$1,100	Remove tree roots/irrigation (if required)
	Fumigation of tree roots		-	Unlikely to be required for citrus
\$50/hr	Removal of irrigation pipe or sprinklers heads	10	\$500	Assumes sub mains and mains are not disturbed Irrigation lines are unlikely to be re-used

APPENDIX 3: Schedule of costs for G - Tree replanting costs

NOTE 1: These costs are estimates. In the event of an incursion where Owner Reimbursement Costs may be paid, the costs and values will be reviewed and updated by agreement of the Relevant Parties to allow current and case specific information to be used.

NOTE 2: Replanting cost does not include land and water costs. Land preparation assumes tree and irrigation removal has been paid for under the tree destruction costs.

NOTE 3: Replanting costs are based on "like-for-like" replanting costs. If changes to orchard design, such as mounding or higher density plantings are included as new improvements, then the additional expense is at the owner's cost. Costs such as royalty payments for protected varieties are only included if these are replacing existing trees with a royalty type cost included at replanting.

A. Navel Oranges
ASSUMPTIONS: 520 trees per hectare, drip irrigation, navel oranges

Item	Cost/Hectare	Comments
Ground preparation	\$1,875	Ripping, mounding, levelling - 15 hours per hectare @ \$125.00/hour
Soil improvements	\$500	Gypsum, lime, organic matter etc.
Pegging, Layout	\$250	
Irrigation (including installation)	\$5,000	Assumes drip irrigation, headworks etc. all re-used
Trees	\$6,240	520 trees at \$12.00 per tree delivered
Planting	\$1,820	520 trees at \$3.50 per tree, including staking/tree guards
Total	\$15,685	

B. Mandarins
ASSUMPTIONS: 800 trees per hectare, drip irrigation, mandarins

Item	Cost/Hectare	Comments
Ground preparation	\$1,875	Ripping, mounding, levelling - 15 hours per hectare @ \$125.00/hour
Soil improvements	\$500	Gypsum, lime, organic matter etc.
Pegging, Layout	\$250	
Irrigation(including installation)	\$5,000	Assumes drip irrigation, headworks etc. all re-used
Trees	\$9,600	800 trees at \$12.00 per tree delivered
Planting	\$2,800	800 trees at \$3.50 per tree, including staking/tree guards
Total	\$20,025	

APPENDIX 4: Yield curves for main citrus varieties

Tree Age (Years)	Mandarins Average (t/ha)	Mandarins High Input (t/ha)	Mandarins Top worked (t/ha)	Navel (t/ha)	Navels High Input (t/ha)	Navels Top worked (t/ha)	Valencia (t/ha)	Grapefruit (t/ha)	Lemons (t/ha)
0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
2	0	1	1	0	1	1	0	0	0
3	2	5	8	2	5	8	2	2	2
4	6	10	15	6	10	15	6	6	6
5	12	15	25	11	15	25	11	11	11
6	16	20	35	16	20	35	16	16	16
7	18	25	45	22	25	45	22	22	22
8	20	30	50	28	30	45	28	28	28
9	25	35	50	32	35	45	32	32	32
10	30	40	50	35	40	45	35	35	35
11	35	45	50	35	45	45	35	35	35
15	40	50	50	35	45	45	35	35	35
20	40	50	50	35	45	45	35	35	35

High input: 'High Input' refers to high fertiliser/irrigation inputs compared with traditional growing programs.

Top worked: Top working involves grafting new varieties onto older trees to change the variety being produced. Top working brings the orchard back into production much quicker than replanting with new trees.