## Index

*Last Updated: LCK 27/09/2010*

## 1. Overview

QuickTrav invoicing currently only supports the Cleaner Climate method of calculating carbon emissions on air tickets, car hire and accommodation. This method complies with the Greenhouse Gas (GHG) Protocol which is the most widely used international accounting tool for understanding, quantifying and managing greenhouse gas emissions.

Carbon emissions are calculated in tonnes of Co2 by multiplying various emission factors provided by Cleaner Climate against ticket air miles, car days and accommodation nights.

Carbon emissions may optionally be reflected on each invoice and detailed customised reports may be extracted using the standard line item query module.
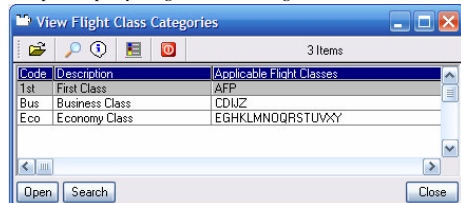
## 2. Setup

The system comes shipped with preloaded Cleaner Climate emission factors and to activate the carbon footprint functionality, you simply have to select Cleaner Climate as the Carbon footprint calculation method.

| Carbon Footprint | |
|---|---|
| Carbon Footprint Calculation method | Cleaner Climate |
| Domestic All Class - Emission Factor (CO2 kgs/mile) | 0.161219 |
| Short Haul Economy Class - Emission Factor (CO2 kgs/mile) | 0.086174 |
| Short Haul Business Class - Emission Factor (CO2 kgs/mile) | 0.129214 |
| Short Haul First Class - Emission Factor (CO2 kgs/mile) | 0.129214 |
| Short Haul Unkown Class - Emission Factor (CO2 kgs/mile) | 0.090404 |
| Long Haul Economy Class - Emission Factor (CO2 kgs/mile) | 0.074218 |
| Long Haul Business Class - Emission Factor (CO2 kgs/mile) | 0.215204 |
| Long Haul First Class - Emission Factor (CO2 kgs/mile) | 0.296871 |
| Long Haul Unkown Class - Emission Factor (CO2 kgs/mile) | 0.101716 |
| Car Hire - Emission Factor per day | 0.040000 |
| Accommodation - Emission Factor per night | 0.031000 |
| Show estimated CO2 emissions on invoices? | ✗ |

The base units for air ticket emissions are nautical air miles. You do **not** have to have air miles activated in the branch setup (this setting is provided for the old method of capturing total air miles per ticket).

The system also needs to know the seat classes to identify which emission factor to use so you must ensure that the flight class categories have been correctly setup as follows;
*Setup\Company\Flight Class Categories*

| Code | Description | Applicable Flight Classes |
|---|---|---|
| 1st | First Class | AFP |
| Bus | Business Class | CDIJZ |
| Eco | Economy Class | EGHKLMNOQRSTUVXY |

⚠ *If flight the class categories are not setup, the emissions will be based on the "Unknown" set class factor*
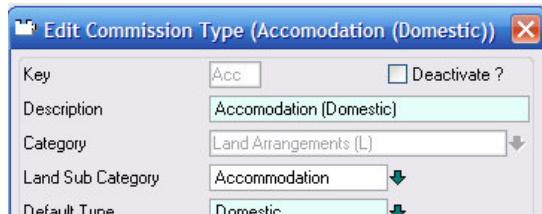
The base units for car and hotel bookings are days and nights respectively. In order for the system to be able to calculate the relevant duration, you need to activate the capture of return dates in the branch ticketing setup (although this switch is under ticketing, it is used for land arrangements as well)
*Branch setup\Ticketing*

| | |
|---|---|
| Capture Flight Times ? | ✓ |
| Capture Fare Basis ? | ✓ |
| Capture Return Dates ? | ✓ |
| Capture Tour Codes ? | ✓ |
| Capture IATA Numbers ? | ✓ |

⚠ *If no return dates are available, the duration will be set to 1 which will result in understated emissions*

The system also needs to know whether a land arrangement is a car hire or accommodation and as many agencies use multiple or custom commission type codes over and above the standard 'Car' and 'Acc', each car and accommodation land commission type must be flagged with the relevant sub category



⚠ *If land commission type are not categorised, they will be ignored by the carbon calculations*
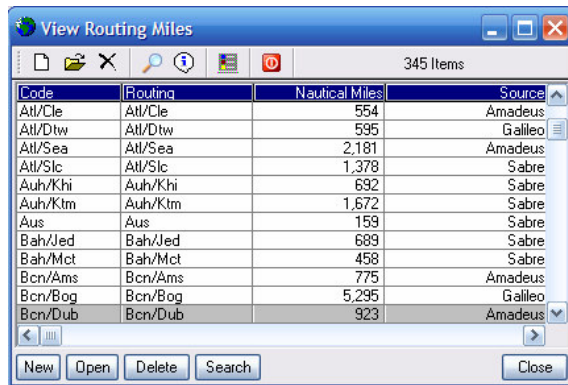
## 3. Calculations

### 3.1 Air Tickets
The carbon emission is calculated on all air tickets and refunds by multiplying each leg's air miles by the emission factor matching the route type (domestic, short haul or long haul) and class (economy, business and first).
Note: An international leg is deemed short haul if the leg distance is less than 3122 nm otherwise it is deemed long haul.

QuickTrav invoicing v1.6q+ automatically imports a standard set of routings and related air miles into the routing nautical air miles table (included in the genmast.def shipped with the upgrade) and automatically updates the table from the GDS booking whenever a ticket is imported. This table can also be manually edited for routes that have not been imported or for older routes before upgrading.

| 1 nm (nautical mile) | 1.15 m (statutory mile) | 1.852 km (kilometre) |
|---|---|---|

*Setup\Company\Routing Miles*



### 3.2 Car Hire
The carbon emission is calculated on those land arrangements with commission / service types flagged as Car Hire by multiplying the car days by the single car hire emission factor. Car days are calculated as the number of days from the travel to the return date (inclusive).

### 3.3 Accommodation
The carbon emission is calculated on those land arrangements with commission / service types flagged as Accommodation by multiplying the room nights by the single accommodation emission factor. Accommodation nights are calculated as the number of nights between the travel and return dates.

## 4. Queries

All carbon emission queries must be extracted from the line item query module and ticket emissions may
optionally be shown by each segment on the ticket.

### 4.1 By Line

In order to build a CO2 emission report by line item, you must remember not to include any segment query
fields (including any one of these will cause the query module to repeat the line for each segment on air tickets)

The following fields are related to the CO2 emission calculations

| Query Field | Description | Example |
|---|---|---|
| *Air Tickets* | | |
| Routing Details | Ticket routing (max 4 legs/segments) | Dbn/Jnb/Fra/Jnb/Dbn |
| Miles (Route) | Nautical miles calculated by looking up the distance for each leg on a ticket in the route miles table  *If the system cannot find any leg in the miles table, the total miles will be set to zero. You can use this fact to build an exception report to highlight any missing leg miles by setting the miles filter to 'Blank'* | 13,614 |
| *Land* | | |
| Travel Date | Starting date used for land duration calculations | 15/09/2010 |
| Return Date | Ending Date used for land duration calculations | 24/09/2010 |
| Duration | No of car days or hotel nights for commission types flagged as such in the commission type setup | 9 |
| *CO2* | | |
| CO2 Tonnes | Carbon emission in tonnes calculated by multiplying air miles / land duration by the relevant coefficients in the carbon footprint setup. | 1.7254  0.2790 |

It is advisable to filter the source to only show air tickets and land arrangements (1,2,6) and to group the output
by Source as different methods are used for air tickets and land.
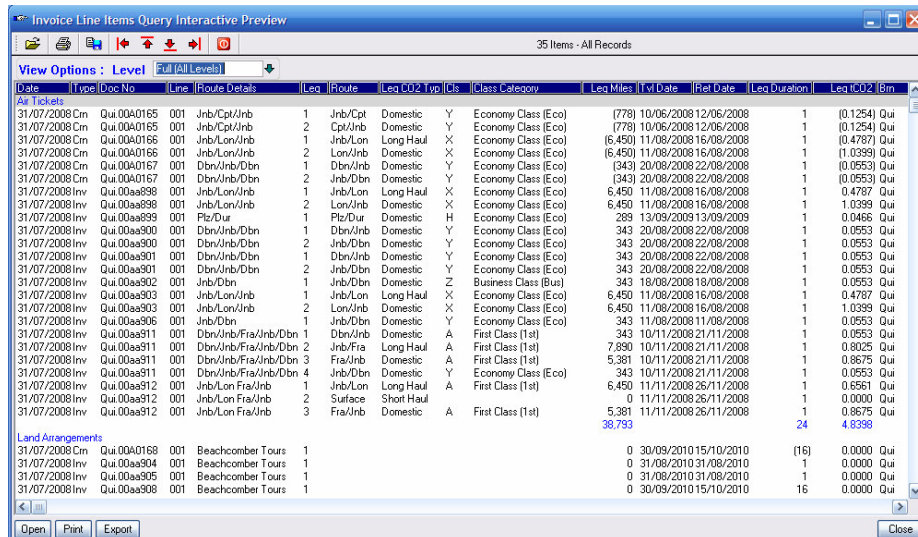
Example

### 4.2 By Segment

In order to build a CO2 emission report by ticket segment/leg you must remember to include any segment query fields (including any one of these will cause the query module to repeat the line for each segment on air tickets)

The following fields are related to the CO2 emission calculations

| Query Field | Description | Example |
|---|---|---|
| *Air Tickets* | | |
| Segment Route | Leg routing | Jnb/Fra |
| Segment CO2 Type | The applicable route type to be used to match the segment to the carbon coefficients | Long Haul |
| Segment Class | The segment class letter | A |
| Segment Class Category | The class category applicable to the segment class | First Class |
| Segment Miles | The leg distance in nautical miles *(as above, you can use this field to generate an exception report for legs without table miles by setting the filter to 'Blank')* | 7,890 |
| *Land* | | |
| Travel Date | Starting date used for land duration calculations | 15/09/2010 |
| Return Date | Ending date used for land duration calculations | 24/09/2010 |
| Leg Duration | No of car days or hotel nights for commission types flagged as such in the commission type setup | 9 |
| *CO2* | | |
| Segment CO2 | Carbon emission in tonnes calculated by multiplying air miles / land duration by the relevant coefficients in the carbon footprint setup. | 0.8025<br><br>0.2790 |

It is advisable to filter the source to only show air tickets and land arrangements (1,2,6) and to group the output by Source as different methods are used for air tickets and land.

Example