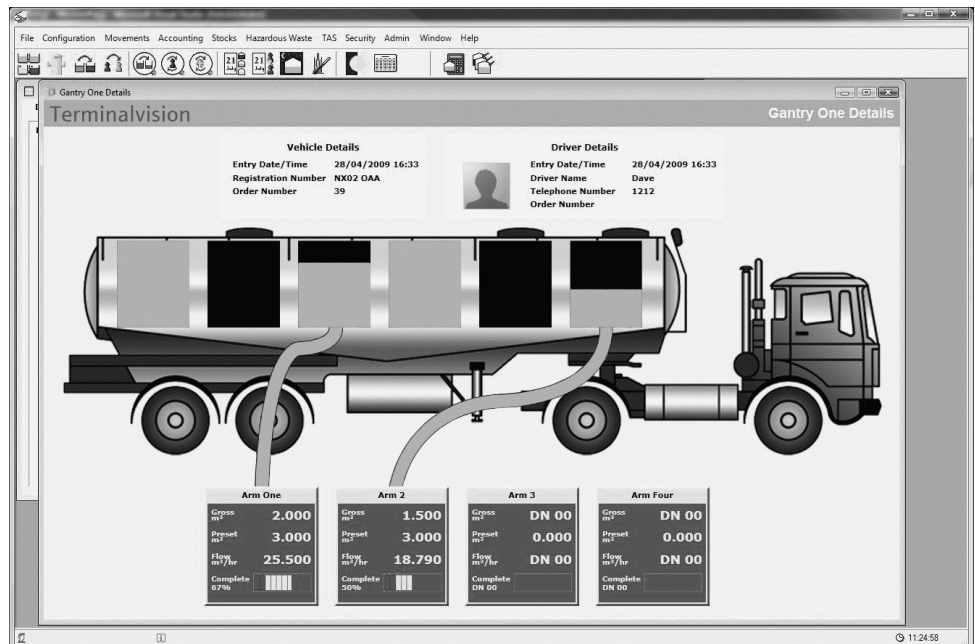
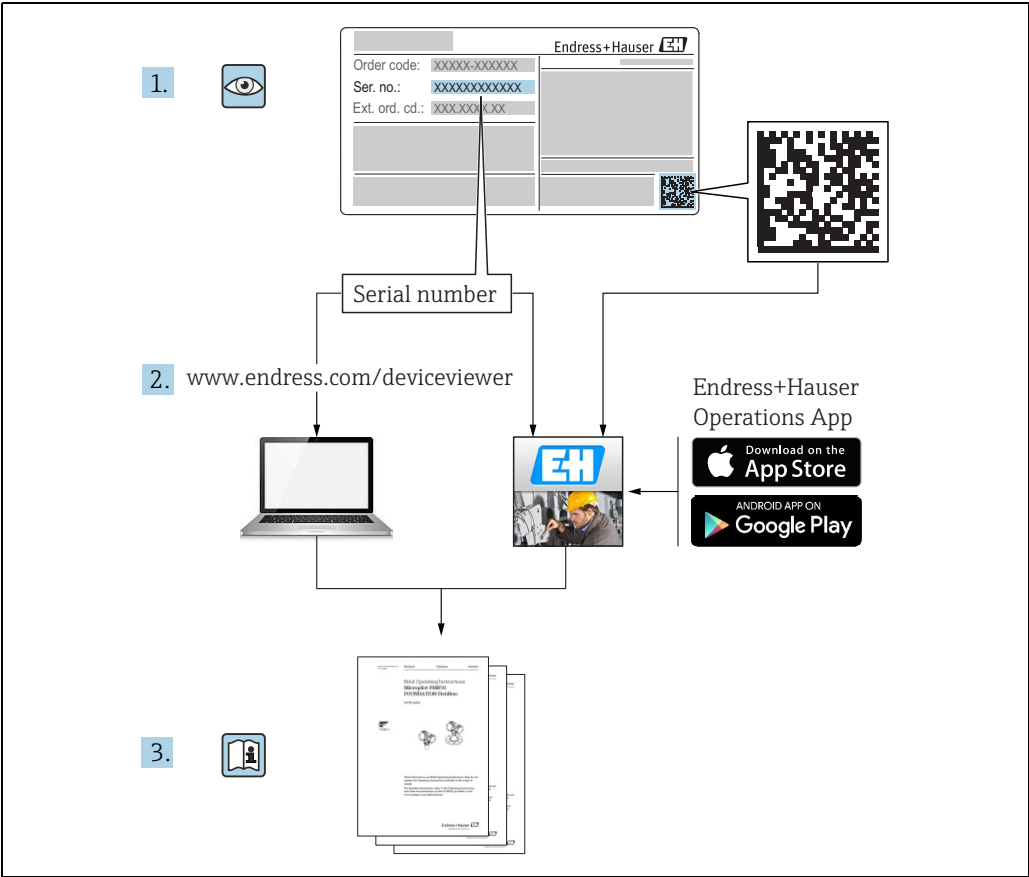


# Operating Instructions Terminalvision NXS85

Terminal Management Software  
Queuing Installation and Operation





A0023555

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# 1 Document information

## 1.1 Target audience for this manual

This manual should support during the operation and configuration of Terminalvision. It deals with the operation of and the configuration steps to setup the Queuing System of Terminalvision.

It is recommended receiving a training on the system by Endress+Hauser.





## 1.2 Version history

Document version	Valid for SW version	Changes to the previous version
BA01897G/00/EN/01.18	18.2.3	Initial version





## 1.3 Document function

### 1.3.1 Used symbols




#### Safety symbols

Symbol	Meaning
 A0011189-EN	<b>DANGER!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
 A0011190-EN	<b>WARNING!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
 A0011191-EN	<b>CAUTION!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
 A0011192-EN	<b>NOTICE!</b> This symbol contains information on procedures and other facts which do not result in personal injury.



#### Electrical symbols

Symbol	Meaning
 A0011197	<b>Direct current</b> A terminal to which DC voltage is applied or through which direct current flows.
 A0011198	<b>Alternating current</b> A terminal to which alternating voltage is applied or through which alternating current flows.
 A0011200	<b>Ground connection</b> A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
 A0011199	<b>Protective ground connection</b> A terminal which must be connected to ground prior to establishing any other connections.

## Symbols for certain types of information

Symbol	Meaning
 A0011193	<b>Tip</b> Indicates additional information.
 A0011195	<b>Reference to page</b> Refers to the corresponding page number.
1., 2., 3...	Series of steps
 A0018373	Result of a sequence of actions

## Symbols in graphics

Symbol	Meaning
1, 2, 3...	Item numbers
1., 2., 3...	Series of steps
A, B, C...	Views
 A0011187	<b>Hazardous area</b> Indicates a hazardous area.
 A0011188	<b>Indicates a non-hazardous location</b> Safe area (non-hazardous area)

## 1.4 Documentation

### 1.4.1 Operating instructions

Document number	Instrument	Type of Document
BA01582G/00	Terminalvision	Configuration Guide
BA01580G/00	Terminalvision	Installation
BA01584G/00	Terminalvision	Operation Guide
BA01583G/00	Terminalvision	Weighbridge Configuration and User Guide
BA01897G/00	Terminalvision	Queuing Installation and Operation
BA01898G/00	Terminalvision	Self-Service Kiosk

## 2 Identification

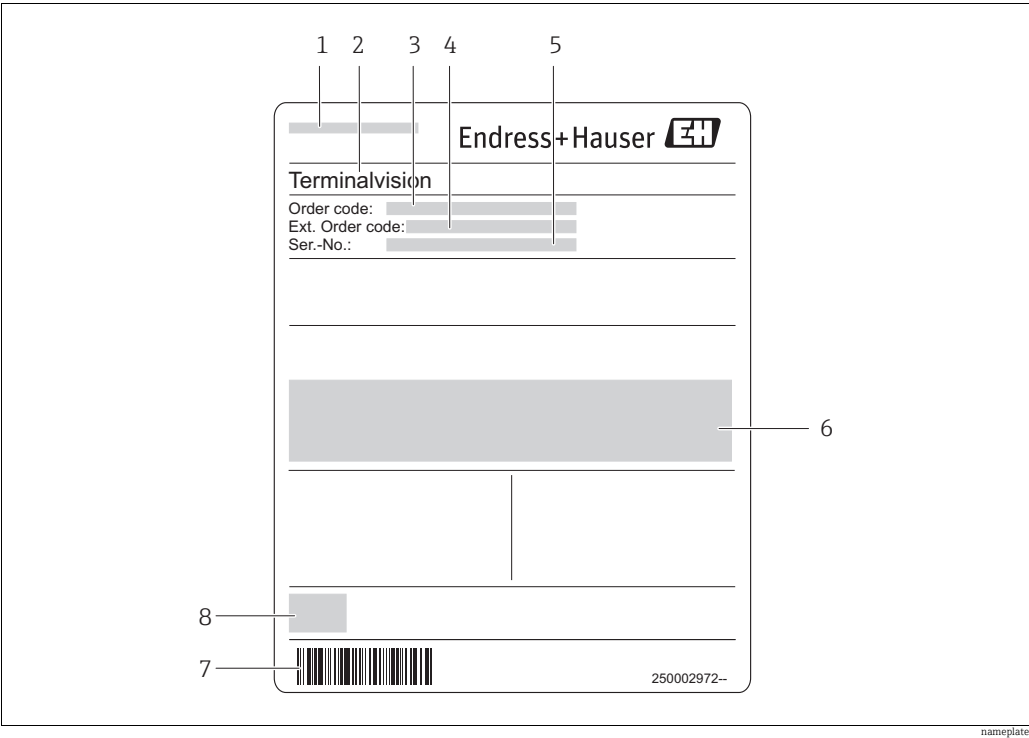
### 2.1 Product identification

The following options are available for identification of the software:

- Nameplate specifications
- Order code with breakdown of the software features on the delivery note
- Enter serial numbers from nameplates in W@M Device Viewer ([www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)); all information about the software is displayed.

For an overview of the technical documentation provided, enter the serial number from the nameplates in the W@M Device Viewer ([www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)).

### 2.2 Nameplate



- 1 Address of manufacturer
- 2 Device name
- 3 Order code
- 4 Extended order code (Ext. ord. cd.)
- 5 Serial number (Ser. no.)
- 6 Certificate and approval relevant data
- 7 Barcode
- 8 CE mark

## 2.3 Order code and device version



To find out the version of your software, enter the order code indicated on the nameplate in the search screen at the following address:  
[www.products.endress.com/order-ident](http://www.products.endress.com/order-ident)

## 2.4 Device documentation

The information required to retrieve the documentation can be found on the nameplate of the device.



Technical documentation can also be downloaded from the Download Area of the Endress+Hauser web site: [www.endress.com](http://www.endress.com) → Download. However this technical documentation applies to a particular instrument family and is not assigned to a specific device.

### 2.4.1 W@M Device Viewer



1. Launch the W@M Device Viewer: [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)



2. Enter the serial number (Ser. no.) of the device: see nameplate.  
↳ All the associated documentation is displayed.

### 2.4.2 Endress+Hauser Operations App



The **Endress+Hauser Operations App** is available both for android smart phones (Google Play Store) and for iPhones and iPads (App Store).

Via the serial number:



1. Launch the **Endress+Hauser Operations App**.



2. Enter the serial number (Ser. no.) of the device: see nameplate.  
↳ All the associated documentation is displayed.

## 2.5 Registered trademarks

Microsoft®, Windows® and Internet Explorer®  
Registered trademarks of the Microsoft Corporation

Modbus™  
Modbus is a registered trademark of Schneider Electric USA, Inc.

Java®  
Registered trademark of Sun Microsystems, Inc.

Mozilla® Firefox®  
Registered trademark of the Mozilla Foundation

Android® and Google Play® are registered trademarks of Google Inc.

iPhone® and iPad® are trademarks of Apple® Inc., registered in the U.S. and other countries.

## 3 Basic safety instructions

### 3.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- Trained, qualified specialists: must have a relevant qualification for this specific function and task
- Are authorized by the plant owner/operator
- Are familiar with federal/national regulations
- Before beginning work, the specialist staff must have read and understood the instructions in the Operating Instructions and supplementary documentation as well as in the certificates (depending on the application)
- Following instructions and basic conditions

The operating personnel must fulfill the following requirements:

- Being instructed and authorized according to the requirements of the task by the facility's owner operator
- Following the instructions in these Operating Instructions

### 3.2 Designated use

#### 3.2.1 Application

Terminalvision is a terminal management and loading monitoring software designed to meet the requirements of depots and terminals. Interfacing to most vendor devices used for access control, batch controllers, flow computers, and weighbridges, Terminalvision provides a secure and controlled loading and off-loading procedure for all movement types. Terminalvision also enables site control and overview, allowing operators to access details of all gantries, loading arms, vehicles, drivers, and products in use on site.

Terminalvision can be provided as a simple standalone station for small depots, or be configured on larger sites as a full Client/Server system where multiple operator stations are required. Printers can be distributed throughout the system, for example placed within the terminal control room and control rooms for internal reporting, as well as at the exit gate for the automatic printing of BOLs.

### 3.3 Workplace safety

For work on and with the device:

- Wear the required personal protective equipment according to federal/national regulations.
- Switch off the supply voltage before connecting the device.

### 3.4 Operational safety

Risk of injury!

- Operate the device in proper technical condition and fail-safe condition only.
- The operator is responsible for interference-free operation of the device.

#### Conversions to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers

- If, despite this, modifications are required, consult with Endress+Hauser.

### **3.5 Product safety**

The device is designed to meet state-of-the-art safety requirements, has been tested and left the factory in a condition in which it is safe to operate. The device complies with the applicable standards and regulations as listed in the EC declaration of conformity and thus complies with the statutory requirements of the EG directives. Endress+Hauser confirms the successful testing of the device by affixing to it the CE mark.

## 4 Introduction

The queuing system is primarily designed to work alongside the Terminalvision product. It consists of three separate modules which may be installed on multiple physical machines, a single physical machine or any combination of this. Each module is installed using the same installation program as described in this manual.

Furthermore, this manual details the operation of the TFA queuing system when installed alongside an existing installation of Terminalvision.

### 4.1 Installation Requirements

- There is no requirement for the server, viewer screen, operator screen or instance of Terminalvision to be installed on the same physical machine.
- All physical machines in use must be visible to each other via network connections.
- The queuing system has been tested on Windows 10 and Windows Server 2016.
- The system relies on Microsoft .NET Framework 4.7.1 or equivalent/greater. The installation tool will install this if required.

#### 4.1.1 Installation Order

The installation of the queuing system should be carried out in the order shown below:

1. Install an instance of Terminalvision.
2. Configure the instance of Terminalvision.
3. Install the Queuing Service portion of the queuing system.
4. Install any viewer and operator screens required.

### 4.2 Modules/Components

The queuing system consists of four components:

- **Queuing Service** – The Queuing Service runs in the background and controls all aspects of the queue planning and operator interaction. On Windows this module runs as a system service.
- **Operator Screen** – The Operator Screen allows the user to interact with the Queuing Service. The Operator Screen communicates with the Queuing Service using network connections to make Queuing Service requests and receive Queuing Service updates.



An important concept to grasp is that making changes in the operator screen results in a request for change being sent to the queuing service. If this request is successful an update is sent back to the operator screen.

- **Viewer Screen** – The sole purpose of the Viewer Screen is to display updates from the Queuing Service. Interaction with the Viewer Screen is very limited.
- **Terminalvision integration** – The Terminalvision integration allows Terminalvision and the queuing service to interact with each other for the purpose of synchronising data.

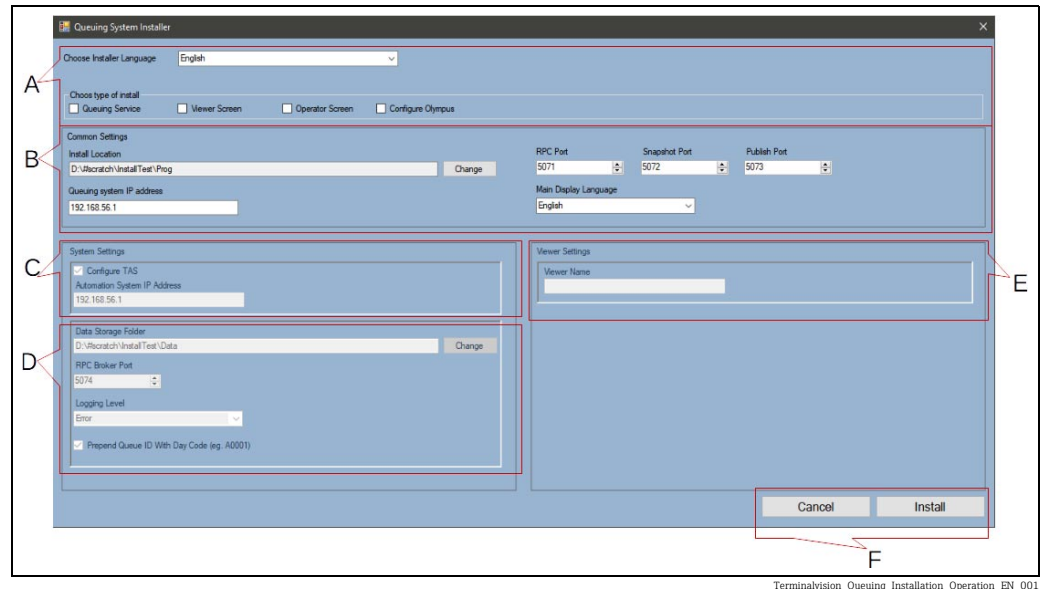
Throughout this manual it is assumed that a corresponding installation of Terminalvision has been fully configured BEFORE any attempt is made to operate the queuing service or associated screens. This includes (amongst others):

- Security
- Vehicles
- Drivers
- Yard locations
- Access control devices

## 5 Installing the Queuing System

Before continuing, ensure any installation of Terminalvision is configured correctly.

To begin the installation run the **TFA.Queuing.Installer.exe** program. The program will open as shown in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_001

If Microsoft .Net 4.7.1 installation is required, this will complete before the installation screen appears.

Each section of the installer relates to a different aspect of the system and is described below.

### 5.1 Installation Options – (Section A of the Installation Screen)

The installation screen supports multiple languages. The user can change the currently displayed language by clicking the **Choose Installer Language** drop-down box. Each module is installed by ticking the relevant box at the top of the installation screen. Multiple selections may be made if more than one module is required on the same physical machine.

### 5.2 Common Settings – (Section B of the Installation Screen)

Regardless of the modules chosen for install there are a number of common settings. This section of the installer is always enabled.

The individual settings are described below:

- **Install Location** – this field defaults to the operating systems designated installation location. Click the **Change** button to choose a different folder.
- **Queuing System IP address** – this field defaults to the local machine IP address. Amend this value if, for example, you have multiple network adapters and the IP address chosen is incorrect or the Queuing Service has already been installed on a different machine.
- **Common Network ports** – the queuing system using a number of network ports for inter-process communication.  
The defaults are:
  - **RPC Port:** 5071

- **Snapshot Port:** 5072
- **Publish Port:** 5073

These settings should only be changed if a specific network port conflict has been identified.

- **Main Display Language** – use this drop-down box to choose the display language for any Operator screens and the main language for any Viewer Screens.

### 5.3 Terminalvision Configuration – (Section C of the Installation Screen)

- **Configure TAS** – select this box if the queuing system is being installed as an add-on to Terminalvision system then it is necessary to configure the TAS service connection settings. In the **Automation System IP address** box, enter the IP address for the machine running Terminalvision.

### 5.4 Queuing Service Settings – (Section of the Installation Screen)

- **Data Storage Folder** – this field defaults to the operating systems designated user data location. The queuing system server will store local data in this location. Click the **Change** button to choose a different folder.
- **RPC Broker Port** – this is another of the network ports that the queuing system requires to run. This setting should only be changed if a specific network port conflict has been identified.
- **Logging Level** – the queuing system is capable of logging diagnostic information to a variety of places. Choose the default logging level here. The recommended setting is **Error**. The options are:
  - **None:** No logging.
  - **Error:** Only errors will be logged.
  - **Warning:** Warnings and Errors will be logged.
  - **Information:** Warnings, Errors and additional diagnostic messages will be logged.
  - **Verbose:** All possible logging is enabled.
- **Queue ID Prefix** – by default the queue ID displayed to the user is a four-digit number prefixed with a single character to denote the week day. De-select this check box if the week day code is not required.

### 5.5 Operator Screen / Viewer Screen – (Section E of the Installation Screen)

The only setting available in the installer for an Operator or Viewer Screen installation is the **Screen Name** setting. This is a name applied to each screen to be individually identified. This allows screen specific settings to be applied.

The viewer screen appears by default on screen 0. If the screen should appear on a different physical display then a setting must be amended as follows:

1. Using Windows **File Explorer**, navigate to the folder the viewer screen was installed to.
2. Locate the file named **PortConfig.json**.
3. Open the file in a text editor such as Windows **NotePad**.
4. The contents of a typical PortConfig.json file are shown below  

```
{
  "AgentName": "Viewer1",
  "QueuingSystemIpAddress": "192.168.1.101",
  "RpcPortNumber": 5071,
  "DisplayScreen": 1
}
```
5. Locate the **"DisplayScreen":** setting and edit the number to represent the physical display the viewer screen should be displayed on.

6. The example shown above ("**DisplayScreen**":1) will display the viewer screen on screen **1**. Due to the nature of Windows screen numbering, some trial and error may be required before the correct number is found. If a screen is specified that does not exist, the viewer screen will default to display **0**.

## 5.6 Continuing the Installation – (Section F of the Installation Screen)

To begin the installation click **Install**. Once the install has completed, restart the machine. To cancel the installation click **Cancel**.

## 6 Post-Installation Configuration

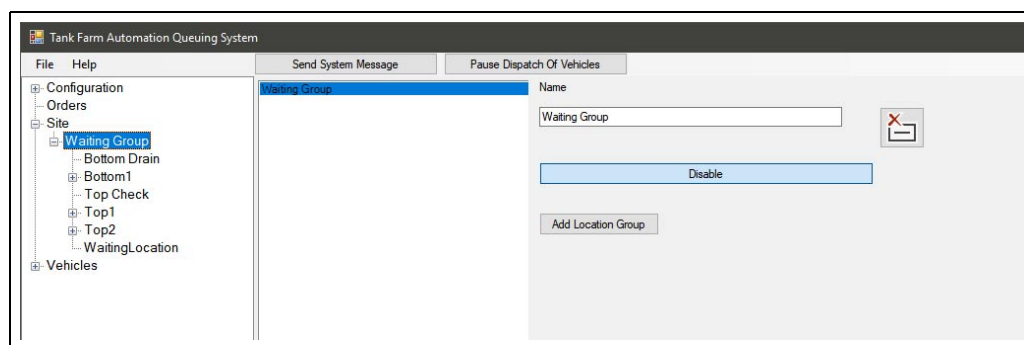
The queuing system will not queue orders until further configuration is completed. The following items must be configured before the system will operate correctly:

### 6.1 Location Groups

In order to time and plan truck movements around a site the queuing system must have knowledge of the order in which site locations are visited. This is achieved by splitting a site up into Location Groups. Each location that is relevant to queuing must be assigned to a location group – which are then given an order which matches the normal site flow. For example, all loading bays might belong to a group called **Loading Bays**.

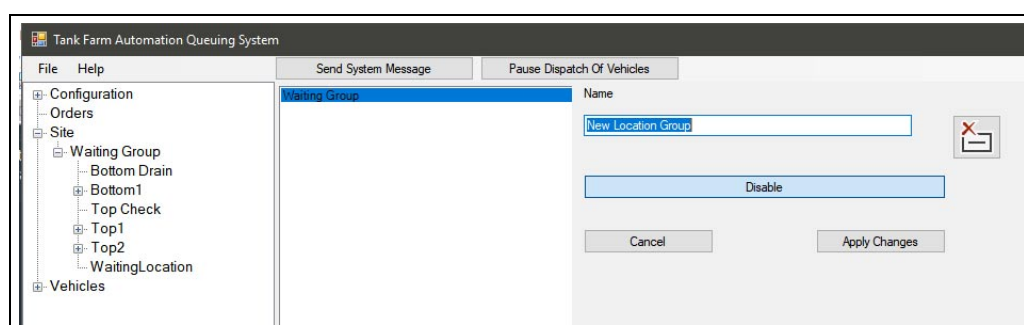
When the system is first started after installation all configured locations that are relevant to the queuing system will be contained in the default location group. This is named **Waiting Group**. To add more site location groups, proceed as below:

1. In the operator screen expand the **Site** item and select the **Waiting Group** item. See figure below.



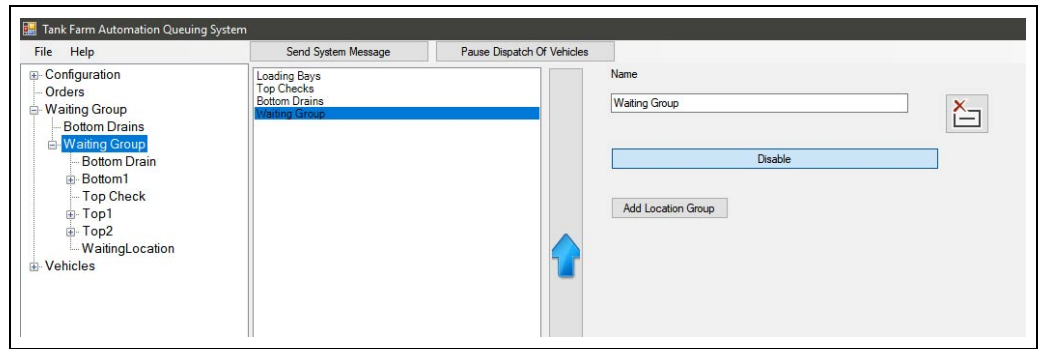
Terminalvision\_Queueing\_Installation\_Operation\_EN\_002

2. Click the **Add Location Group** button.
3. Give the new location group a name by editing the **Name** field and click **Apply Changes**. See figure below.



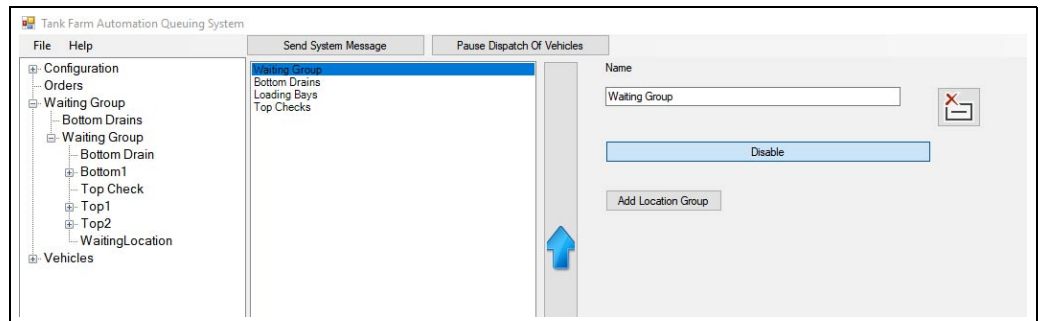
Terminalvision\_Queueing\_Installation\_Operation\_EN\_003

4. Repeat steps 2 and 3 until all location groups have been added. See figure below.



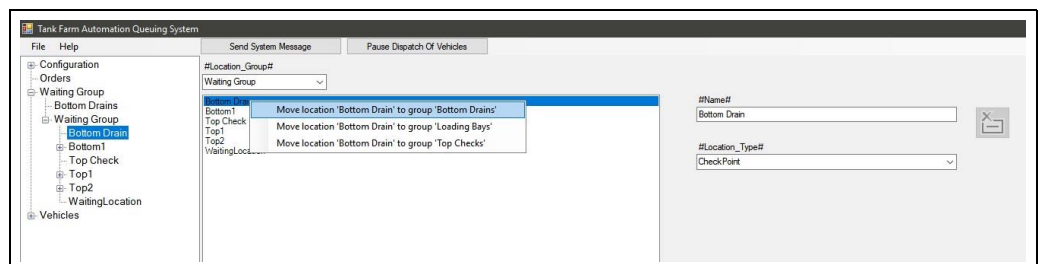
Terminalvision\_Queueing\_Installation\_Operation\_EN\_004

5. By selecting the required location group and clicking the large **Up** or **Down** arrows, rearrange the location groups so they match the normal site flow. See figure below. The **Waiting Group** should always be the first location group.



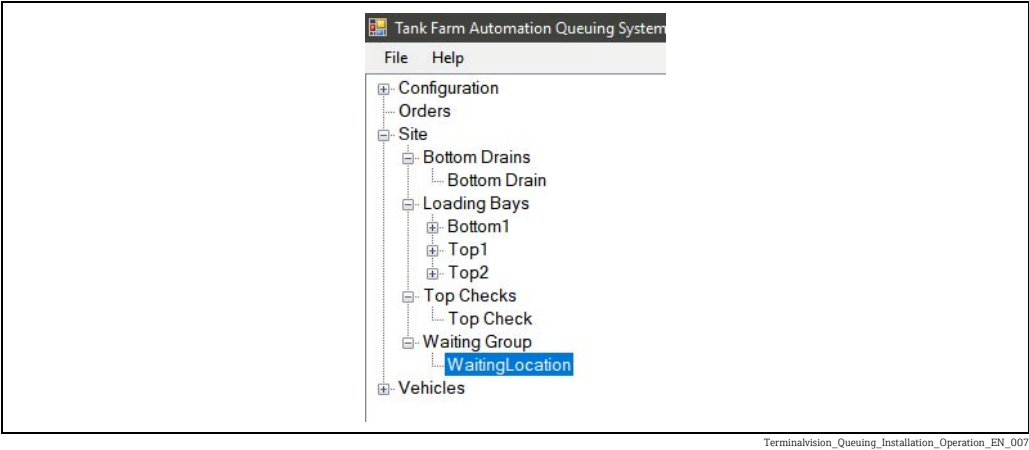
Terminalvision\_Queueing\_Installation\_Operation\_EN\_005

6. Select any location listed underneath the **Waiting Group**. The right-hand side of the window will change to show all the locations currently contained in that location group. Right-click on each location and move to the correct location group. See figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_006

7. Once all the locations have been assigned correctly, the only location in the **Waiting Group** should be the default **WaitingLocation**. See figure below.

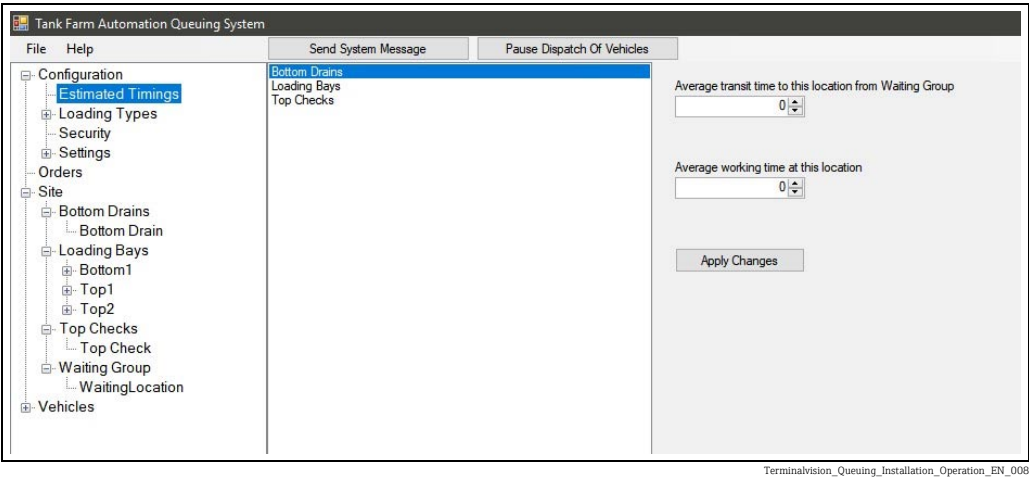


8. The location groups are now configured correctly.

## 6.2 Estimated Timings

The queuing system relies on the user supplying estimates of the time taken to move between site locations and the typical time taken at each location (excluding actual loading). These settings are configured by expanding the **Configuration** item and selecting **Estimated Timings**.

For each location group, configure the estimated time to travel from the previous location group and the estimated working time at a typical location in this location group. All times are in seconds. It will not be possible to apply the changes until all the groups have been configured. See figure below.



During normal operation the system will attempt to update these timings to more closely match actual events.

## 6.3 Viewer Settings

Each viewer screen is given a name during installation. The viewer screen uses this name to request individual settings from the queuing system. The viewer screens will use default settings until individual settings are provided.

To add new viewer screen settings follow the procedure below:

1. Expand the **Configuration** item then expand the **Viewer Settings** item.
2. Initially only default settings are displayed.
3. Select the **Default** item.
4. Click the **Add Viewer Settings** button.
5. Set the name for the new settings to the name used when installing the viewer screen.
6. Change settings as desired (→ 19).
7. Click **Apply Changes**. See figure below.

The screenshot shows the 'Tank Farm Automation Queuing System' configuration window. The left sidebar has a tree view with 'Configuration' expanded, showing 'Viewer Settings' and 'viewer1' selected. The main area displays settings for 'viewer1'.

**Viewer Name:** viewer1

**Data Update Period:** 10 seconds

**Main Colours:**

Go to bay static background	Test	Wait in lounge static background	Test
Go to bay static foreground	Test	Wait in lounge static foreground	Test
Bay Status static Background	Test	Bay Status dynamic Background	Test
Bay Status static Foreground	Test	Bay Status dynamic Foreground	Test

**Loading Type Colour Settings:**

**TopLoading:**

Display loading type

Go to bay dynamic background	Test
Go to bay dynamic foreground	Test
Wait in lounge dynamic background	Test
Wait in lounge dynamic foreground	Test

**BottomLoading:**

Display loading type

Go to bay dynamic background	Test
Go to bay dynamic foreground	Test
Wait in lounge dynamic background	Test
Wait in lounge dynamic foreground	Test

**Bays To Display:**

Bottom 1
Top 1
Top 2
Bottom 1
Top 1
Top 2

**Languages To Display:**

**Other Options:**

- Audible alerts
- Visual alerts
- Display loading types on separate pages
- Change notification sound

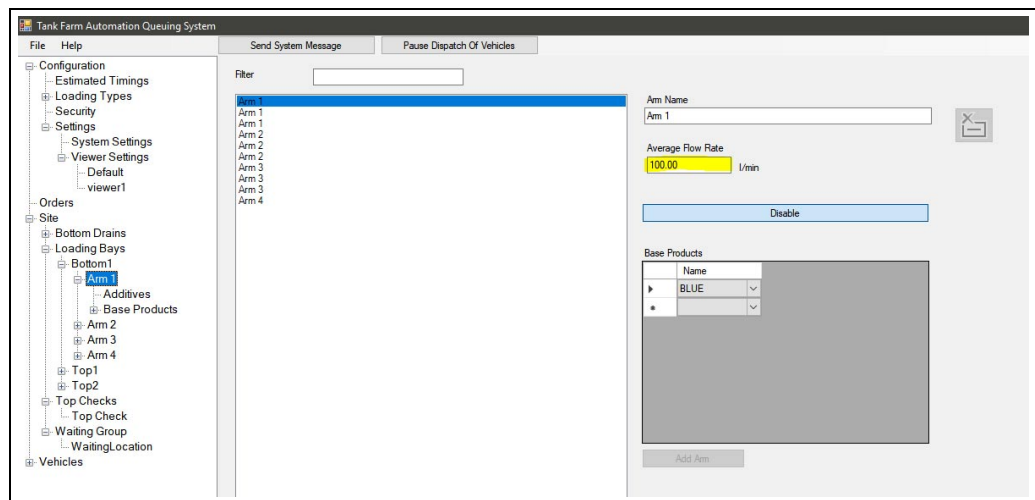
Buttons: #Cancel#, Apply Changes

Terminalvision\_Queueing\_Installation\_Operation\_EN\_009

8. If the viewer screen is already running it may need to be restarted to detect the changes.

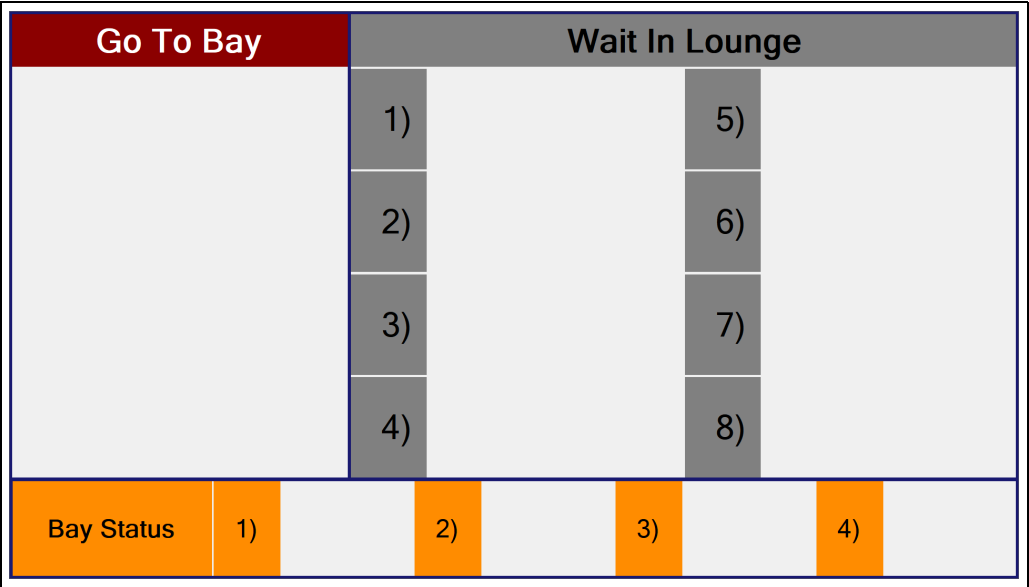
## 6.4 Arm Flow Rates

1. Locate a loading bay by expanding the **Site** item and then the location group which contains your loading bays.
2. Select an arm on one of the loading bays.
3. The right-hand side of the window will now show all available arms in the system.
4. For each arm, set the average flow rate (in litres per minute).
5. This figure only needs to be an approximation. See figure below.





Terminalvision\_Queueing\_Installation\_Operation\_EN\_010

## 7 Viewer Screen



The viewer screen is designed to be displayed in a driver waiting area. The screen is designed in a similar way to an airport departure board to provide drivers with status updates and notifications.

The configuration for each installed screen is obtained directly from the queuing service. Each screen identifies itself to the queuing service using the name it was given in the installer. If viewer settings exist with a matching name these are sent back to the viewer screen for its use. The configuration can be edited from the main operator screen (→ 27).

-  If the user has multiple viewer screens and wishes them to have different settings it is important to provide unique viewer names for each screen during the installation. Any screens that share the same viewer name will receive the same settings.
-  Also note that if the queuing system is not currently running, the viewer screen will continuously retry until the service is started again.

### 7.1 Updates and Notifications

#### 7.1.1 Wait In Lounge

When the queuing system has accepted an order and planned it, the relevant driver is added to the **Wait In Lounge** section of the screen which informs a driver that they should wait for further instructions.

#### 7.1.2 Go To Bay

Once the queuing system determines that the driver should proceed to the loading bay his entry on the screen will move from the **Wait In Lounge** section to **Go To Bay** section. This notification will be accompanied by a visual and audible alert if configured to do so. The queuing service sends the next vehicle to its bay when the number of vehicles at that bay, or en-route to it, is less than the maximum number of vehicles (→ 27) configured to be at the bay.

#### 7.1.3 Bay Status

This section details which queue entries are currently at a loading bay.

### 7.1.4 System Message

If a system message is received, the screen will be temporarily overwritten with the content of the system message. The example in figure below is displaying the message "This is a system test message."



Terminalvision\_Queueing\_Installation\_Operation\_EN\_012

After the operator specified time interval the screen will revert to its original display.

## 7.2 Configuration Options

As mentioned in section above (→ 19) the vast majority of settings for the viewer screen are obtained from a running queuing service.

The simplest way to change the connection settings for a viewer screen is to manually edit a configuration file. The file is named:

- *PortConfig.json*

and is found in the installation folder, which by default is:

- *C:\Program Files\Tank Farm Automation\Queueing*

The content of an example file is shown below:

- `{"AgentName":"Viewer1","QueueingSystemIpAddress":"192.168.1.101",  
"RpcPortNumber":5071,"DisplayScreen":0}`

In this example:

- **AgentName** – The name used to identify the viewer screen to the queuing service. In this example the viewer screen is named **Viewer1**.
- **QueueingSystemIpAddress** – The IP address of the machine hosting the queuing service. This can be changed to point to a different IP address if required.
- **RpcPortNumber** – This is the network port number defined during the installation of the viewer screen. This should only be changed if directed to do so by your IT infrastructure management representative.
- **DisplayScreen** – If the machine on which this viewer screen is installed has multiple monitors it may be necessary to change this value to allow the viewer screen to be displayed on the desired monitor.

## 8 Operator Screen

The operator screen allows an operator user to configure, modify and view the state of the entire queuing system.

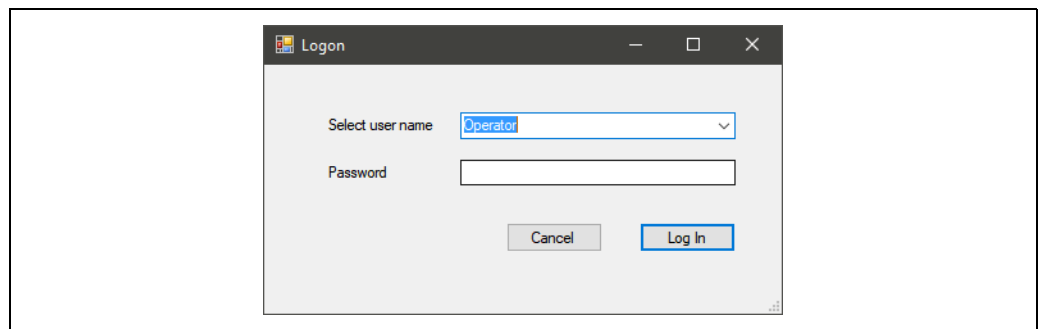
### 8.1 Opening the Operator Screen

From the Windows start menu select **TFA Queue Operations**.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_013

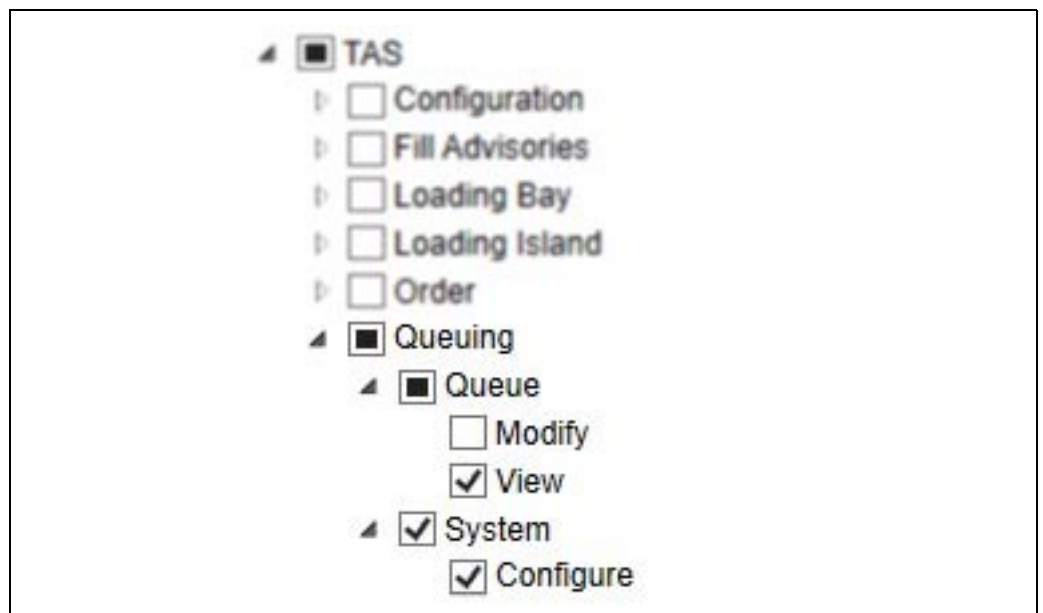
When the program first starts the user is required to log on with a valid user-name and password combination as shown in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_014



When configured to connect to a running Terminalvision installation the list of users is obtained from Terminalvision. It is necessary therefore for the security in Terminalvision to be configured to allow the required users to access the queuing system before the queuing service is started. This is configured in the Terminalvision user group settings as shown in the example below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_015



Please see the relevant Terminalvision Configuration Guide BA01582G for further details.

The desired user can be selected by clicking on the **Select user name** selection box.



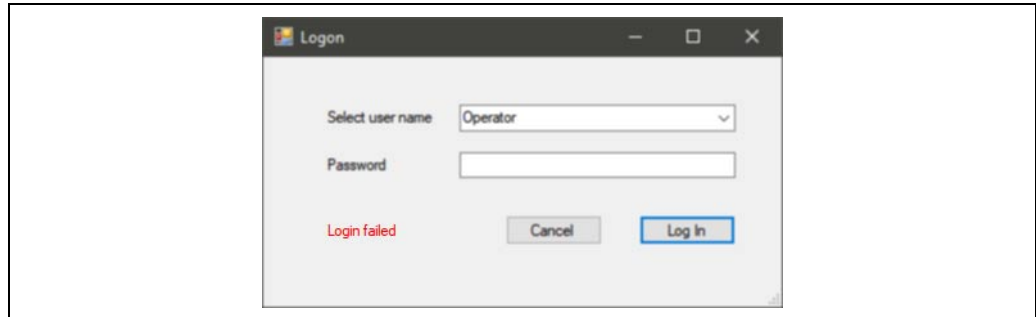
The system has a pre-configured user named **Engineer**. This user cannot be edited or removed and is solely for the use of support personnel.

Select the desired user name and enter the correct password.

Click **Log In**.

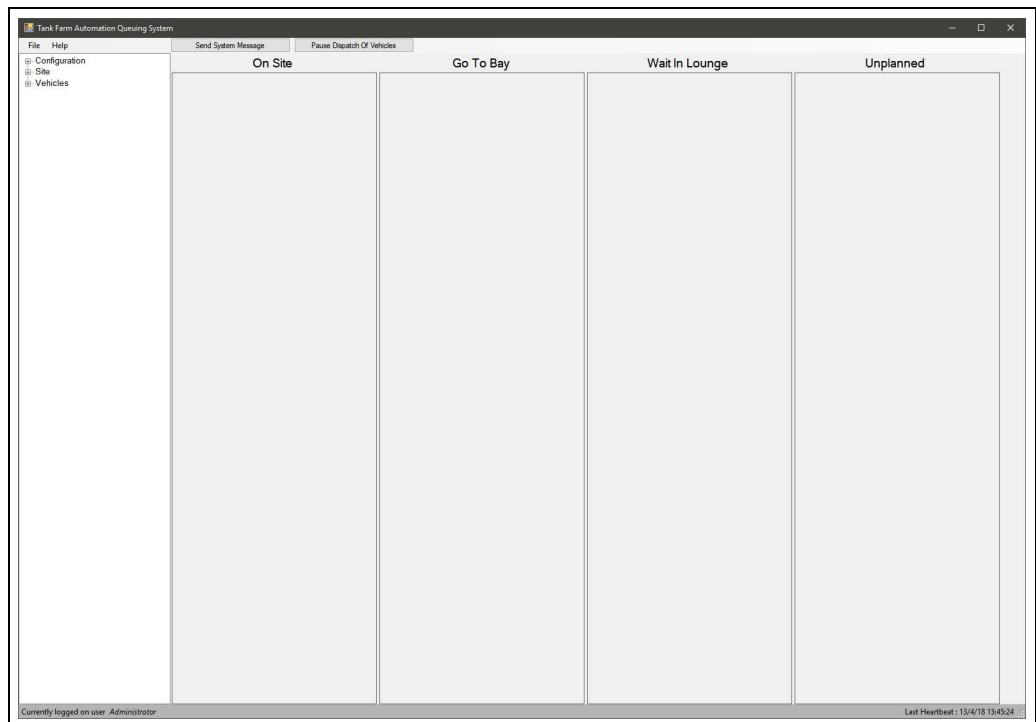
If the password supplied is correct the operator screen will be displayed.

An incorrect password is signified by a **Login Failed** message as shown in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_016

After successfully logging in the operator screen will be displayed with the currently logged in user shown in the bottom left hand corner as shown in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_017

## 8.2 Operator Screen Functions

### 8.2.1 Tool bar

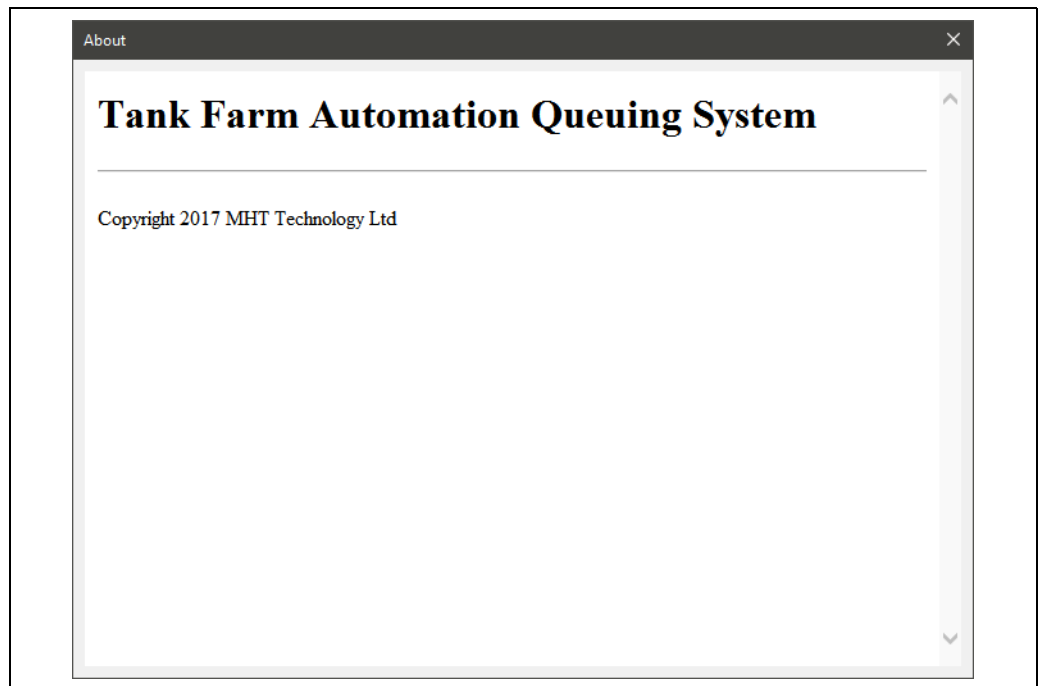
#### File Menu

The **File** menu offers three options:

- **Log In** – Log in as a new or different user.
- **Log Out** – Log out the current user.
- **Exit** – Close the operator screen.

### Help Menu

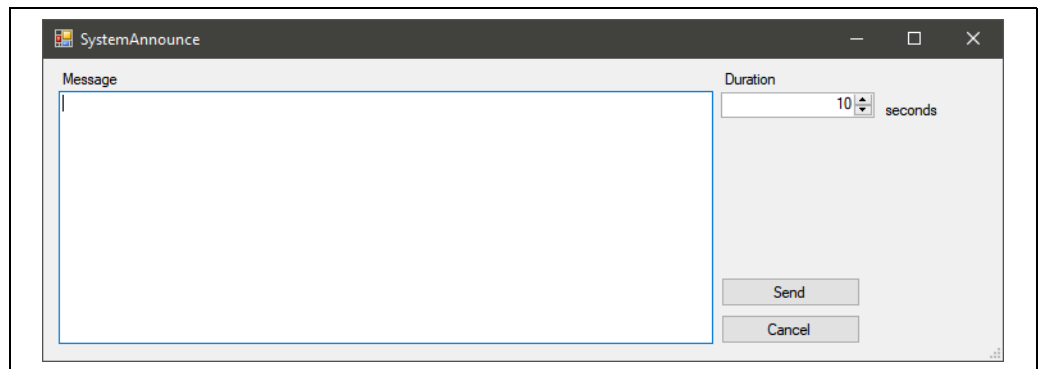
The **Help** menu offers only one option which is to display an **About** notice as seen in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_018

### Send System Message

The **Send System Message** button allows an operator to broadcast a system message that is displayed on all connected viewer screens for a set period of time. Clicking the button opens a dialog as shown in figure below.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_019

Enter the text to be displayed and the number of seconds the message should be displayed for and click **Send**. When the connected viewer screens receive the notification they will display the entered message for the given number of seconds and then continue with their previous displays.

### Pause Dispatch Of Vehicles

By default the queuing system will automatically inform drivers to proceed to their loading bay at an appropriate time. The operator can temporarily prevent this by clicking on the **Pause Dispatch Of Vehicles** button.


When clicked the button will display as highlighted and the text will change to **Resume Dispatch Of Vehicles**.

Whilst the dispatch of vehicles is paused all loaders who have not yet been instructed to proceed to their loading bay will be instructed to remain in the waiting area. When dispatching is resumed the system will immediately begin instructing loaders to proceed to their loading bays in line with the configured settings regarding the maximum number of loaders per bay.

### 8.2.2 Currently logged in user

The currently logged in user is displayed in the bottom left corner of the operator screen.

### 8.2.3 Heartbeat


During normal operation the queuing system transmits health messages approximately every five seconds. The time of the last heartbeat signal received is displayed at the bottom right of the operator screen. If the heartbeat is lost the user is alerted as defined (→  35).

## 8.3 Configuration Options

### 8.3.1 Location Groups

In Terminalvision each yard location is an independent entity and no connection is inferred between them.

The queuing system however needs to understand the flow of vehicles within the site – specifically the order in which locations should be visited.

To facilitate this, the queuing system has the notion of **yard location groups**. Every location on the site must be configured to belong to a group; every other location in that group performs the same function within the site. When the queuing system is first installed only one group exists (the **Waiting Group**) – all other groups must be configured manually. The system will alert the user if these are not configured correctly using the event announcement facility (→  35).

#### Configuring Location Groups

In the example given below, the site has three loading bays and two checkpoint locations. The checkpoint locations are **Bottom Drain** and **Top Check**.

- **Bottom Drain** is a checkpoint location that drivers must visit before they are allowed to proceed to the loading bays.
- **Top Check** is a checkpoint location that drivers must visit after they have finished at the loading bays.

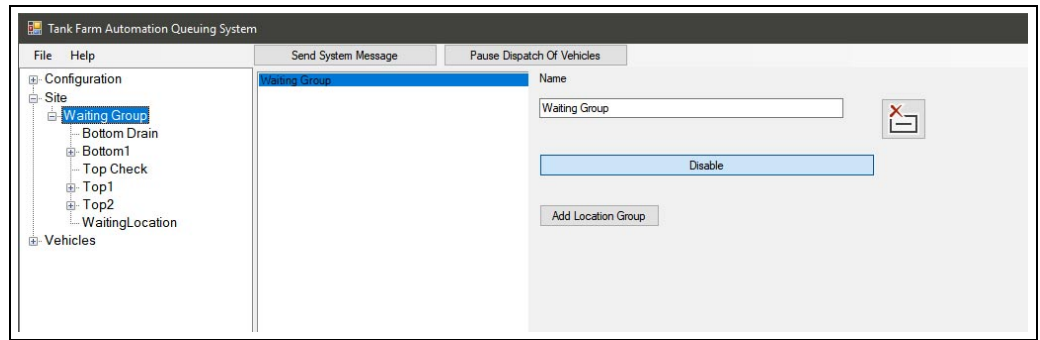
The order of the flow through the site is **Bottom Drain → Loading Bays → Top Check**.



Entry and exit gates are not relevant to the queuing system and therefore are disregarded.

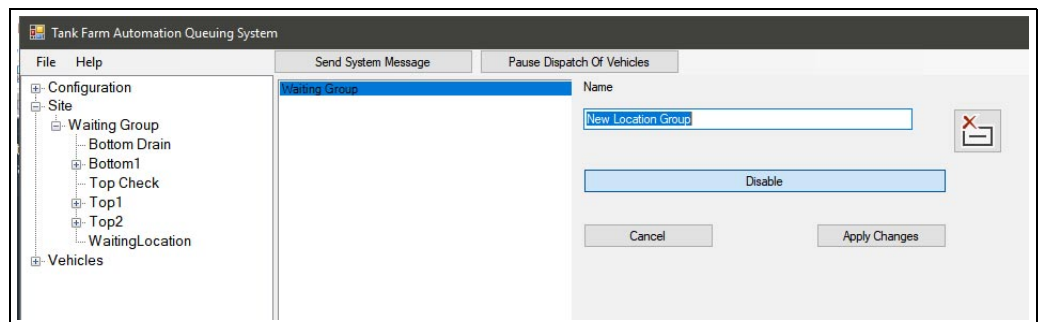
When the system is first started after installation all configured locations that are relevant to the queuing system will be contained in the default location group. This is named **Waiting Group**. To add more site location groups, proceed as follows:

1. In the operator screen expand the **Site** item and select the **Waiting Group** item. See figure below.



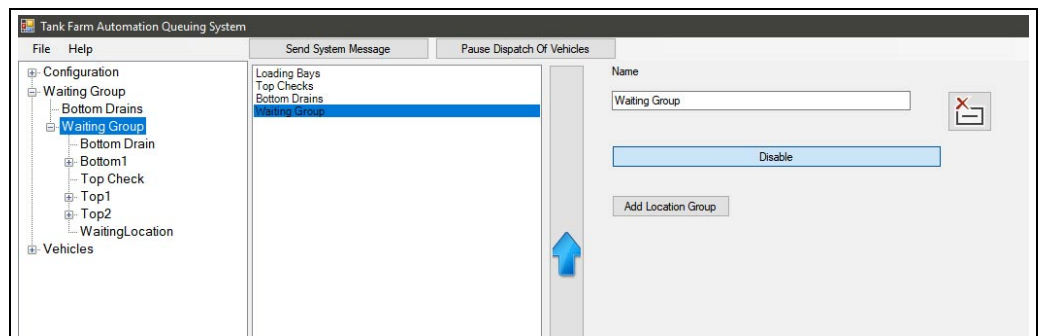
Terminalvision\_Queueing\_Installation\_Operation\_EN\_020

2. Click the **Add Location Group** button.
3. Give the new location group a name by editing the **Name** field and click **Apply Changes**. See figure below.



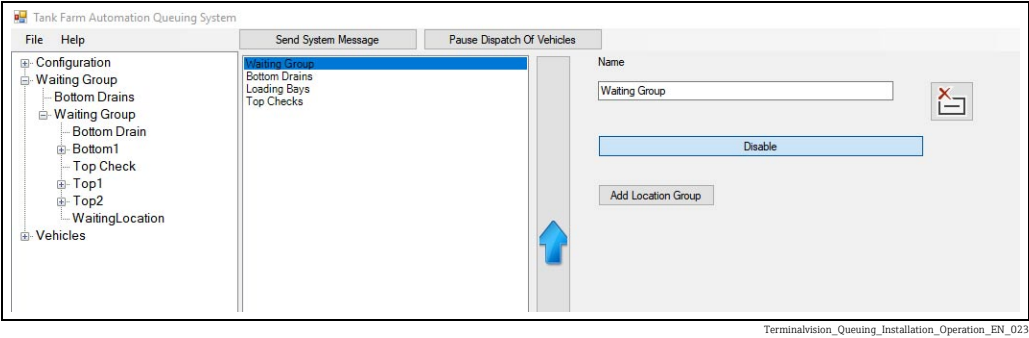
Terminalvision\_Queueing\_Installation\_Operation\_EN\_021

4. Repeat steps 2 and 3 until all location groups have been added. See figure below.

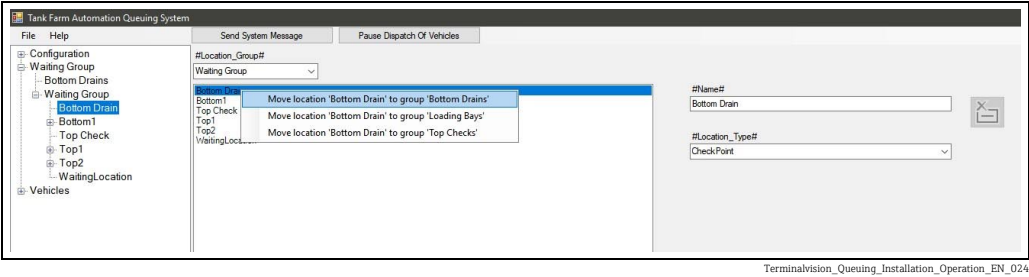


Terminalvision\_Queueing\_Installation\_Operation\_EN\_022

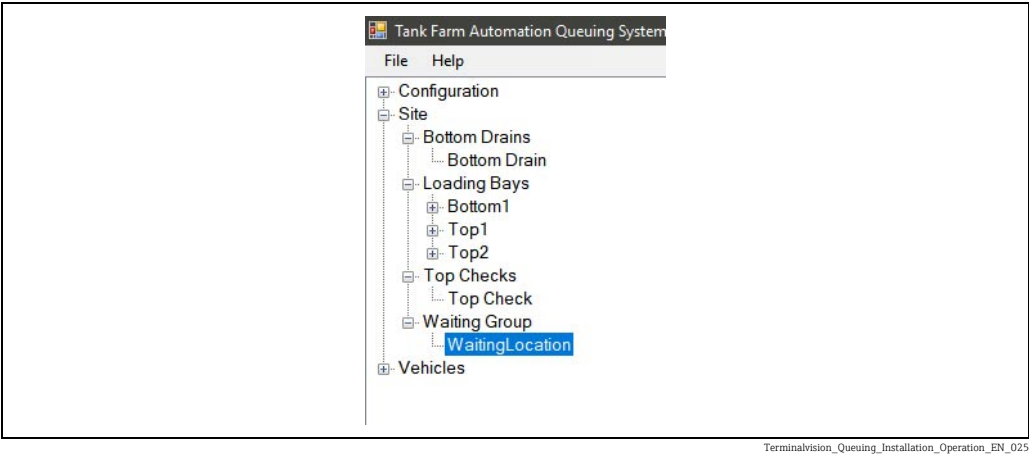
5. By selecting the required location group and clicking the large **Up** or **Down** arrows, rearrange the location groups so they match the normal site flow. See figure below. The **Waiting Group** must always be the first location group.



6. Select any location in the **Waiting Group**. The right-hand side of the window will change to show all the locations currently contained in that location group. Right-Click on each location that requires moving to another group and move to the correct location group. See figure below.



7. Once all the locations have been assigned correctly, the only location in the **Waiting Group** should be the default **WaitingLocation**. See figure below.



8. The location groups are now configured correctly.

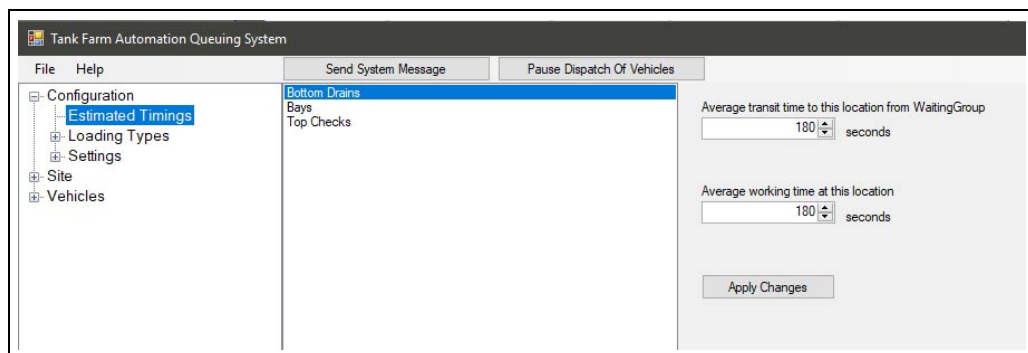
### 8.3.2 Estimated Timings

For each vehicle configured in the system, the queuing system maintains an estimate of that vehicles transit time between location groups and the time spent at each location group. By default these times are adjusted based on actual timings for each vehicle during site visits.

 The estimated time at a loading bay is time other than actual product flow time. For example, connecting earth, operating ACU etc.

When the system is first installed this information is not present and an estimated set of times must be configured. This will be the initial time estimate applied to each vehicle and therefore should be as accurate as possible.

The estimated average times are configured by expanding the **Configuration** item and selecting **Estimated Timings**. For each location group, select the location group and configure the estimated time to travel from the previous location group and the estimated working time at a typical location in this location group. All times are in seconds. It will not be possible to apply the changes until all the groups have been configured. See figure below.



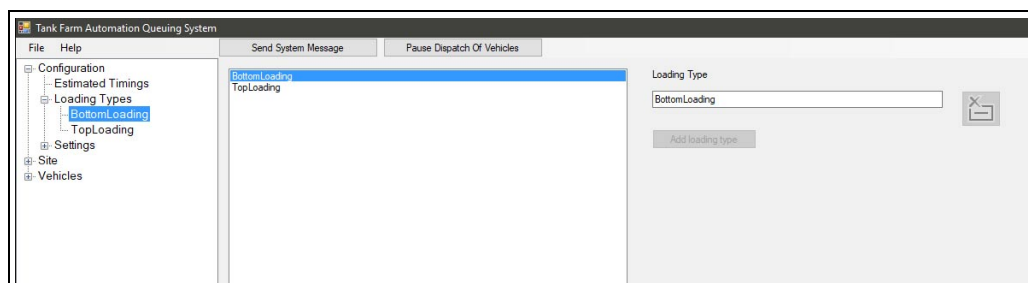
Terminalvision\_Queueing\_Installation\_Operation\_EN\_026

Clicking the **Apply Changes** button will apply these times to every vehicle configured within the system.



Re-applying these settings at any time will reset the estimated timings for every vehicle configured in the system. This can be a useful way to reset average vehicle times.

### 8.3.3 Loading Types



Terminalvision\_Queueing\_Installation\_Operation\_EN\_027

When configured to use an installation of Terminalvision vehicle loading types are pre-defined and cannot be edited within the queuing system.

### 8.3.4 System Settings

This section allows an administrator user to configure the queuing system. The various settings available are detailed below:

#### Colour Settings

Determines the colour used to represent enabled and disabled items in operator screen.

#### Network Settings

- **Queueing system IP address** – The IP address of the machine where the queuing system is installed.

- **Automation system IP address** – The IP address of the machine where Terminalvision is installed.



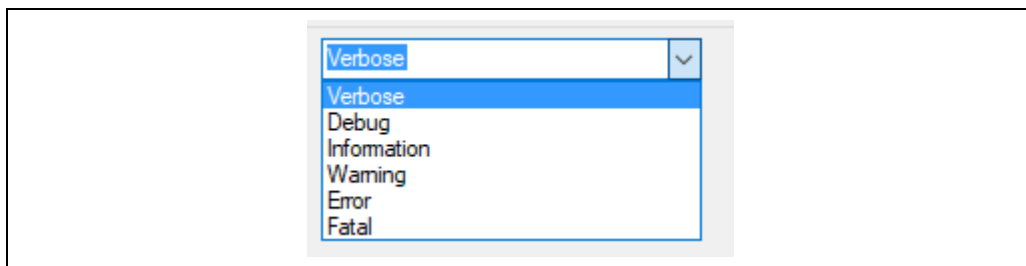
It is possible that these IP addresses may be the same if both applications were installed on the same physical machine.

### Network Port Configuration

Configures the network ports used by the system. These should not be changed unless a specific need is identified by your IT infrastructure management representative.

### System Settings

- **Main Display Language** – This is the language used for the operator screen and the default base language for a viewer screen.
- **Logging Level** – The level of logging the system will record.  
The logging level is incremental:
  - **Fatal** will log only errors defined as Fatal.
  - **Error** will log all errors including Fatal.
  - **Warning** will log all errors and any Warnings.
  - **Information** will log errors, warnings and any information messages.
  - **Debug** will log errors, warnings, information and any debugging messages.
  - **Verbose** will log everything.



Terminalvision\_Queueing\_Installation\_Operation\_EN\_028



It is recommended to leave logging at the default level of Error. Increasing the logging level will rapidly increase the amount of data that must be stored locally and should only be used under direction from your suppliers support representative.

- **Prepend Queue ID With Day Code** – The Queue identification numbers used throughout the system (e.g. A0001) are, by default, prepended with a letter to denote the weekday on which the item was created (A to G representing Monday to Sunday). It is possible to stop this behaviour by clicking this toggle button. This may cause the screen to display what appear to be duplicate entries since entries from different days may have the same numeric ID value but it will be impossible to distinguish which were created on which day.
- **Maximum Vehicles Queuing At Bay** – This defines the number of vehicles the queuing system should attempt to maintain at a given bay at all times. The default value is two which allows one vehicle loading at the bay loading or in the process of preparing to do so and a second vehicle waiting behind to enter the loading bay.

### Data Storage Folder

The folder where runtime data is stored.

### Log File Location

The location for the queuing system log file.



System settings changes do not take effect until the queuing system is restarted.

### 8.3.5 Viewer Settings

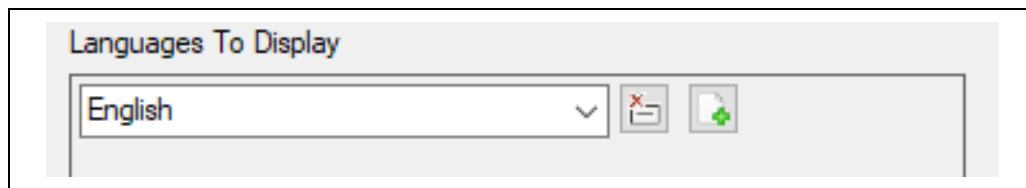
The viewer settings page allows an administrator user to configure the settings for connected viewer screens. Each screen is identified during installation by a name. If multiple viewer screens are installed this name may be unique for each screen or shared between multiple (or all) installed viewer screens. Viewer screens that share the same name identifier will share the same settings.

Terminalvision\_Queueing\_Installation\_Operation\_EN\_029

The various settings available are detailed below:

- **Viewer Name** – The name identifier these settings apply to.
- **Data Update Period** – The number of seconds each page of the viewer screen will be visible for. The default is 10 seconds.
- **Main Colours** – Allows the user to configure the colours used on a viewer screen. To change a colour, click the box marked **Test**.
- **Loading Type Colour Settings** – For each vehicle type it is possible to determine if that vehicle type will be displayed and the custom colours that will be used when that vehicle type is displayed on the viewer screen.  
By default no entries are selected. This instructs the relevant viewer screen to display all vehicle types, using the default colour scheme. If the user wishes to change the colour scheme it is necessary first to select **ALL** the vehicle types that should be displayed on this viewer screen by clicking the **Display loading type** toggle button. Once selected the colours for each vehicle type can be customised.
- **Bays To Display** – By default all loading bays are displayed on the viewer screen. It is possible to restrict the loading bays visible on a viewer screen by de-selecting the bay in this section. Only selected loading bays will be displayed.
- **Languages To Display** – Each viewer screen can be displayed in one or more languages. If more than one language is selected the viewer screen will cycle each display page through the configured languages.
  - To add a language, click the **Add** button (marked with a green + symbol).

- To remove a language click the **Remove** button (marked with a red **x** symbol).
- See figure below for details.

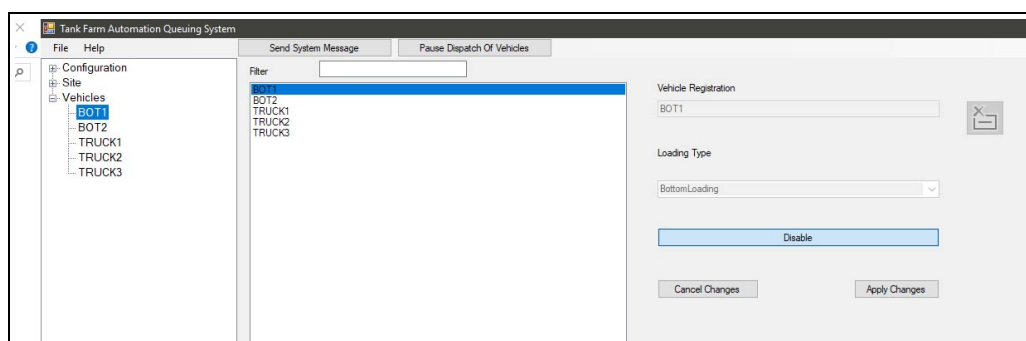


Terminalvision\_Queueing\_Installation\_Operation\_EN\_030

#### ■ Other Options

- **Audible alerts** – This toggle button enables or disables the sounding of audible alerts from the viewer screen when a driver is instructed to head to the loading bay or a system message is announced.
- **Visual alerts** – This toggle button enables or disables the blinking of an item on the viewer screen when a driver is instructed to head to the loading bay.
- **Display loading types on seperate pages** – By default all vehicle types are displayed on the same viewer screen pages. If this toggle button is selected then differing vehicle types will be displayed on different viewer screen pages.
- **Change notification sound** – Clicking this button opens a window which allows the user to choose an .mp3 format file to use as the notification sound for the viewer screen.
- **Add Viewer Settings** – This button allows the user to add a new viewer screen to the configuration.

### 8.3.6 Vehicles



Terminalvision\_Queueing\_Installation\_Operation\_EN\_031

When configured to use an installation of Terminalvision vehicles are pre-defined and cannot be edited within the queuing system. It is possible however to enable or disable a vehicle. If a vehicle is disabled it will not be queued in the system. This setting is not replicated in the Terminalvision configuration. To show the enabled state of a vehicle the vehicle entry is highlighted using the corresponding colour from the colour settings configuration (→ 27).




When an installation of Terminalvision is present it is ALWAYS preferable to enable or disable relevant items using Terminalvision configuration options to avoid potential data mismatches between the queuing system and Terminalvision.

### 8.3.7 Loading Bays/Arms/Products/Additives

When configured to use an installation of Terminalvision loading bays, Products and additives are pre-defined and cannot be edited within the queuing system. It is possible however to enable or disable them. Any disabled item will be not be used by the queuing system.

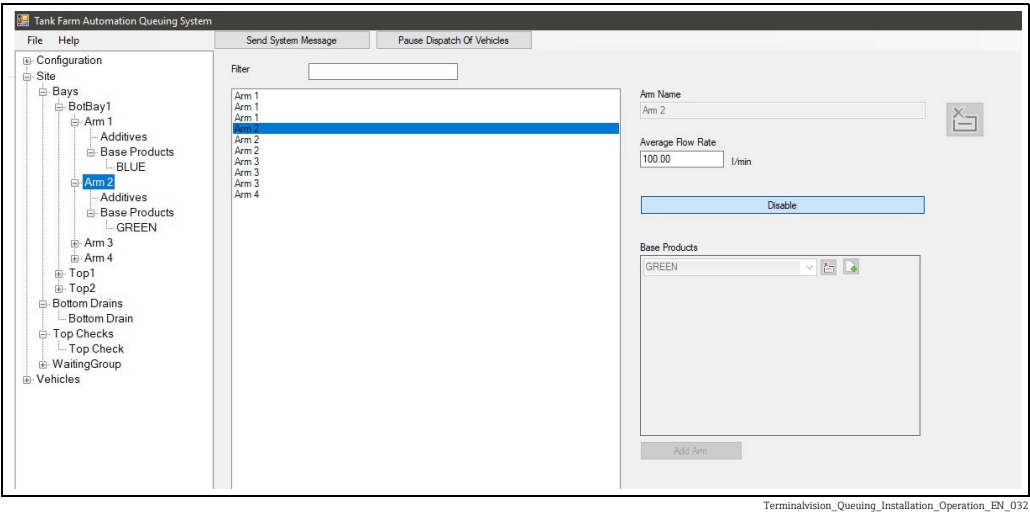
An exception to this rule is the **Average Flow Rate** for an arm. This should be configured for each arm to enable the queuing system to more accurately determine expected loading times.

These settings are not replicated in the Terminalvision configuration. To show the enabled state of an item the items entry is highlighted using the corresponding colour from the colour settings configuration (→ 27).

 When an installation of Terminalvision is present it is ALWAYS preferable to enable or disable relevant items using Terminalvision configuration options to avoid potential data mismatches between the queuing system and Terminalvision.

Viewing item configuration

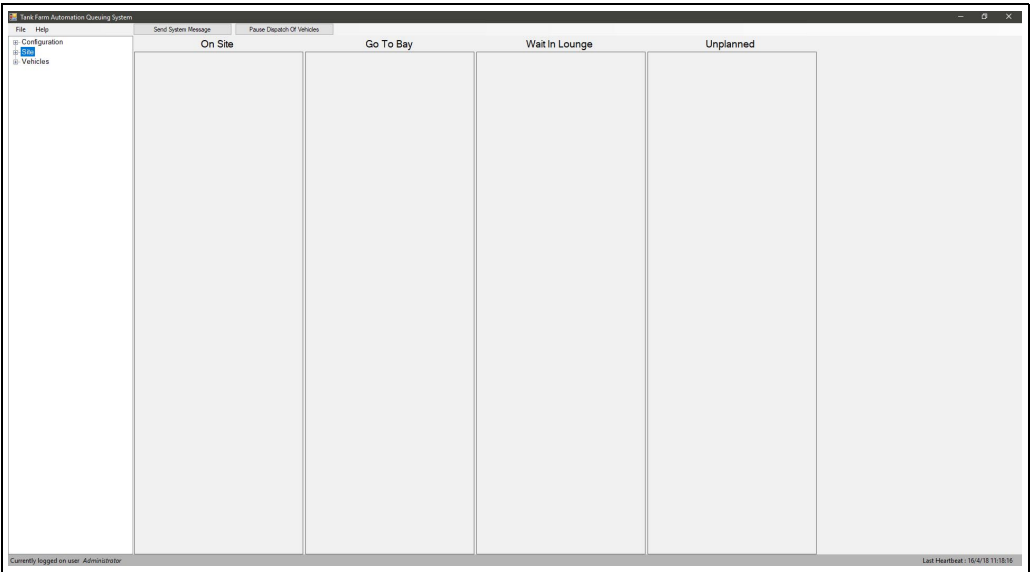
By expanding the **Site** option it is possible to view the configuration of loading bays, the arms on each loading bay and the products and additives that an arm supplies. See figure below which shows **Arm2** on **BotBay1** as an example.



Terminalvision\_Queuing\_Installation\_Operation\_EN\_032

8.4 Day-to-Day Operation

During normal, day-to-day, operations the operator screen user will use the **Site** overview as shown in figure below.




Terminalvision\_Queuing\_Installation\_Operation\_EN\_033

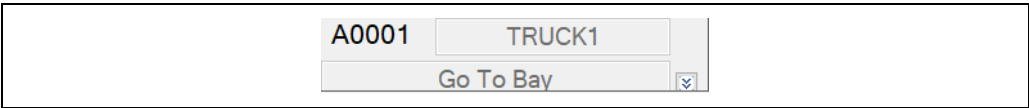
The site overview page consists of four columns:

- **Unplanned** – Loads that are not currently planned are listed in this column. They are sorted by their queue ID. An order may be unplanned because it is waiting for the next planning operation, it has been marked as **Held** (→ 32), it is not yet authorised or no suitable bay is available for the order(s) requested.
- **Wait In Lounge** – Planned loads whose drivers should remain in the waiting lounge appear in this column.
- **Go To Bay** – Planned loads whose drivers should make their way to their assigned loading bay appear in this column.
- **On Site** – Planned loads whose drivers are currently somewhere on site appear in this column. Drivers (and vehicles) remain **On Site** until their fill advisory is marked as completed by Terminalvision.

8.4.1 Queue Entries

A loader is represented by a queue entry box in one of columns. See figure for **Basic view** below for an example. The queue entry can be expanded to show more details or collapsed to show less by clicking the  icon as shown in figures for **Control view** and **Detail view** below.

Basic View

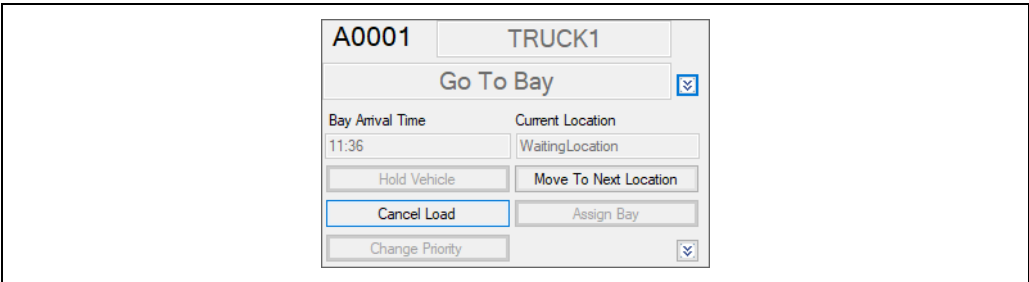


Terminalvision\_Queueing\_Installation\_Operation\_EN\_035

The example in figure above shows three basic pieces of information:

- **A0001** – The queue ID number for this loader.
- **TRUCK1** – The registration number of the vehicle.
- **Go To Bay** – The current status of this loader. (In this example the loader is instructed to proceed to the loading bay). Other possible values are:
  - **At Location** – Loader is at a site location.
  - **In Transit** – Loader is travelling between site locations.
  - **Held** – Loader has been held.
  - **Waiting** – Loader is waiting in the waiting area.
  - **Cancelled** – Loader has been cancelled.
  - **Unplanned** – Loader has not yet been queued.
  - **Not Known** – This is an indication of an error. Contact you support representative.

Control View



Terminalvision\_Queueing\_Installation\_Operation\_EN\_036

This view (figure above) displays extra information and allows control of the queue entry.

- **Bay Arrival Time** – The expected arrival time of the loader at the first loading bay they are planned to visit.
- **Current Location** – The name of the site location where the loader is currently located.

- **Hold Vehicle** – Prevent the loader from being dispatched to the loading bay. This option is only available up to the point at which the loader is dispatched to the loading bay.
- **Cancel Load** – This option is available at any time and will remove the loader from the queuing system.



Re-authorising an order in Terminalvision will re-create the entry if desired.

- **Change Priority** – This option allows the operator to increase the priority of a given loader. A loader is initially given a priority based on the order in which the loader was created - with higher values representing higher priority. For example, if there are 30 loaders the loader who arrived earliest will be priority 30. Clicking this option allows the operator to specify an additional priority value to add to a loader - making their overall priority higher by the entered amount. Loaders with the highest priority are always loaded first.
- **Move To Next Location** – This option allows the operator to manually move a loader on the system to the next logical site location. This is not reflected in Terminalvision and can result in a mismatch between the queuing system and Terminalvision.
- **Assign Bay** – This option allows the operator to specify a loading bay for each order a loader has. If this is selected that location will override the queuing system determination for a loading bay, including disregarding the check that the loading bay specified is valid for the products required. This option is only available up to the point at which the loader is dispatched to the loading bay.

Detail View

Loading Bay	Load Time	Order No
Top1	11:36	45645766

Terminalvision\_Queuing\_Installation\_Operation\_EN\_037

- The view displays extra information regarding the loading bays a loader is to visit in the order they should be visited and the order details.
- **Loading Bay** – The name of the loading bay(s) to visit.
  - **Load Time** – The expected loading time at the given loading bay.
  - **Order No** – The Terminalvision order number. Hovering over the order number will display the products being loaded for that order and the customer reference data as shown in figure below.

Product	Quantity
BLUE	120

Terminalvision\_Queuing\_Installation\_Operation\_EN\_038



The queuing system operates exclusively with base products and additives. The products shown here may be constituent parts of a blended customer product. The blend ratio is taken into account when blended products are displayed.

## 8.5 Normal Operation

The normal expected work-flow is described below.

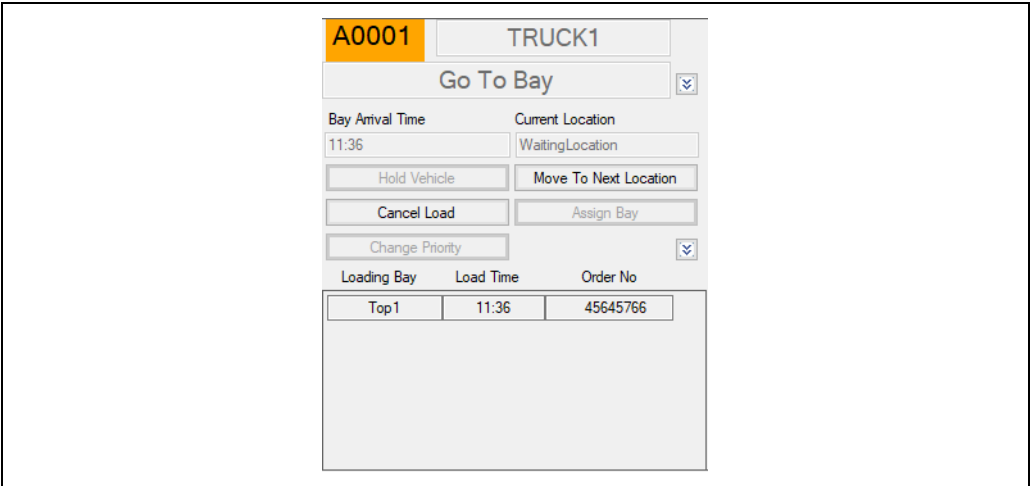
1. Driver selects or creates an order or orders at the **Kiosk**.
2. The order(s) appears in the Terminalvision **TAS Orders** screen.
3. A **queue entry** is created which combines the driver, vehicle and required orders. The queuing system displays this **queue entry** in the **unplanned** section of the site overview screen.
4. An operator authorises the order using the **TAS Orders** screen.
5. If the order can be satisfied, the queuing system plans the order and the queue entry moves to the **wait in lounge** section of the site overview screen.
6. When the driver is required to head to the first bay the queue entry is moved into the **go to bay** section of the site overview screen and an announcement is made via the viewer screen to alert the driver.
7. The driver proceeds to the first location in the site location workflow.
8. When the driver reaches the first location the queue entry moves to the **on site** section of the site overview screen and his/her location is updated.
9. As the driver proceeds around the site their location is updated in the queue entry display.
10. When Terminalvision notifies that the fill advisory has been completed (usually when the driver leaves site) the queue entry is removed completely from the queuing system.

## 9 Event Announcements

### 9.1 Operator Screen

#### 9.1.1 Loader time overrun warning

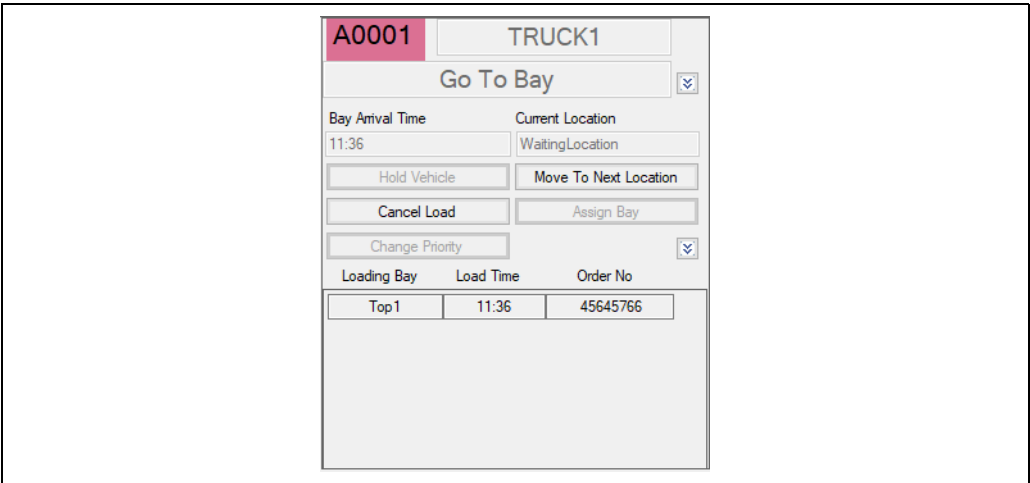
If a loader is overdue at a loading bay by more than the set warning period (default is five minutes) the operator is notified by the queue ID item in the loader queue entry being highlighted in amber (see figure below).




Terminalvision\_Queueing\_Installation\_Operation\_EN\_039

#### 9.1.2 Loader time overrun alert

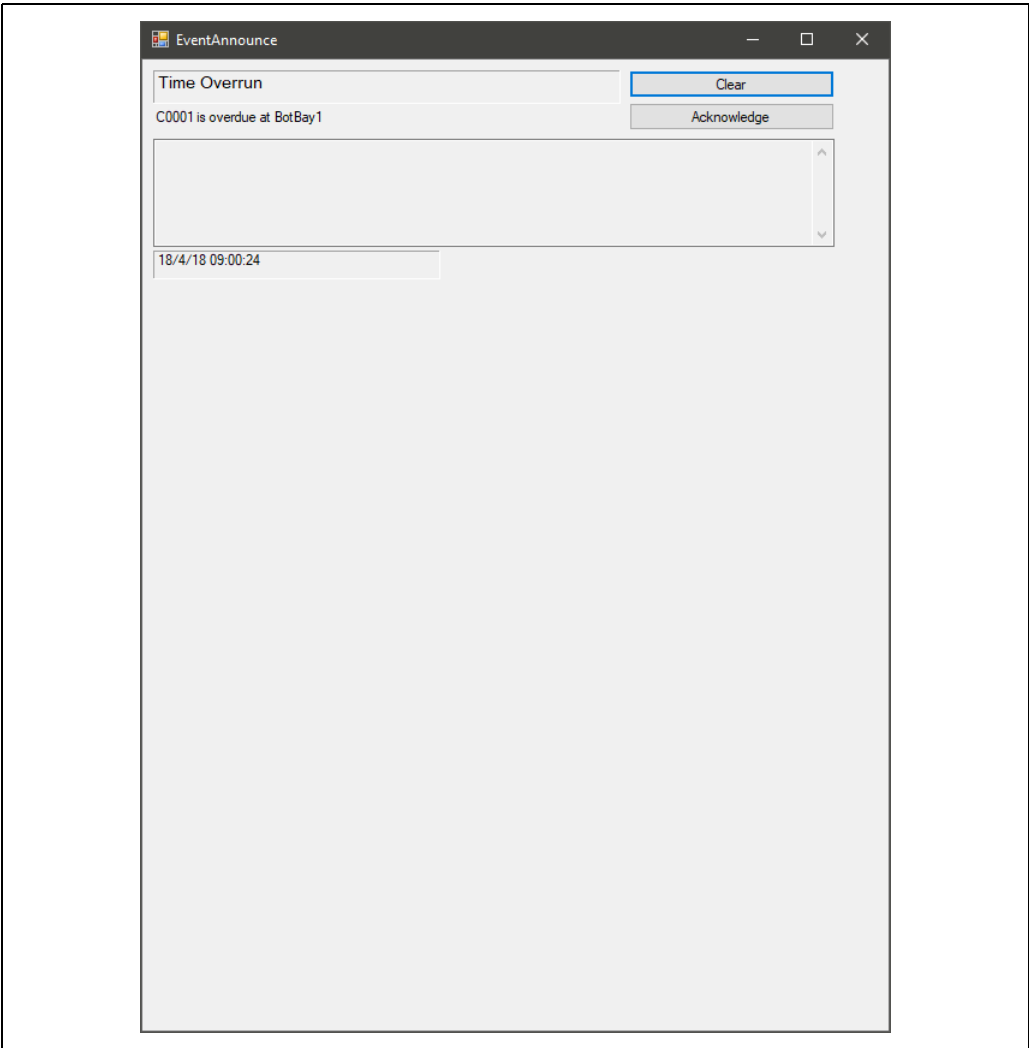
If a loader is overdue at a loading bay by more than the set alert period (default is ten minutes) the operator is notified by the queue ID item in the loader queue entry being highlighted in red (see figure below).



Terminalvision\_Queueing\_Installation\_Operation\_EN\_040

Additionally an event announcement is shown in the Event Announcement screen (→  36).

## 9.2 Event Announcement Window



Terminalvision\_Queueing\_Installation\_Operation\_EN\_041

The queuing system has an event announcement system to alert the operator of important issues in the system. The example shown in figure above is alerting the operator that loader **C0001** is late for arrival at loading bay **BotBay1**.

Some event notifications are repeatedly sent from the queuing system if the cause of the event is still present. The event announcement window will only add new announcements if they are not already visible. Acknowledging an event marks the event as acknowledged but does not remove the event from the announcement window. Clearing an event acknowledges the event and clears it from the announcement window. If an event may repeat it is better to acknowledge it until the cause is resolved as the system will attempt to redisplay it each time it is sent.

The possible announcements are shown in the table below:

Announcement	Description	Auto Repeats
Queueing System Not Responding	Announced if the queuing service has stopped responding for any reason	Y
Configuration Incomplete	The <b>configuration incomplete</b> event will be announced repeatedly whilst the location groups (→ 24) and/or estimated timings (→ 26) are not configured properly	Y
Overdue Loader	The loader specified in the message is overdue at the location given	Y

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