ZFP PROGRAMMING GUIDE

Approved Document No. DFU5000515 Rev 3

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EN54 Compliance Statement

THIS COMPLIANCE STATEMENT IS FOR AUTHORISED SYSTEM ENGINEERS FAMILIAR WITH ANALOGUE FIRE ALARM SYSTEMS AND FIRE ALARM STANDARDS. ENSURE YOU HAVE ATTENDED C-TEC'S AUTHORISED TRAINING COURSE BEFORE USING THE PANEL'S PCTOOLS.

The 'out-of-the-box' fire alarm panel is fully compliant with the requirements of EN54-2 (Fire detection and fire alarm systems, control and indicating equipment) and EN54-4 (Fire detection and fire alarm systems, power supply equipment) and is 3rd party certified as meeting these standards.

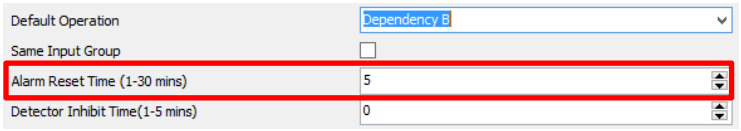
Please note, the Engineering Functions listed below, go beyond the scope of EN54-2. DO NOT affix the EN54 approval label (supplied) to the front of the panel if it has been configured to operate in a way that would make it non-compliant with the requirements of EN54-2.

- A single delay time shall not exceed 10 minutes. However, it is possible to build delays upon delays that can exceed 10 minutes in total. This is non-compliant with EN54-2 Clause 7.11.1 c).

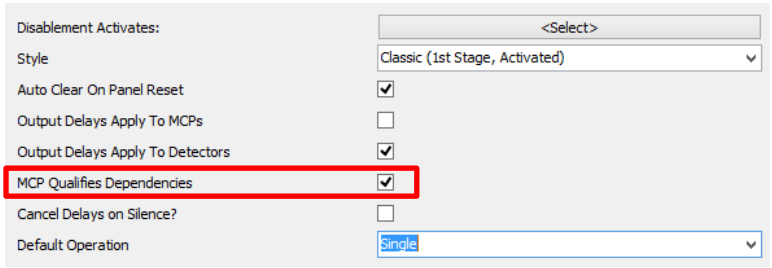
- It is recommended that any Input Group configured to apply delays to outputs (as defined in EN54-2 Clause 7.11), shall contain at least one MCP for the purposes of overriding any delay in order to comply with EN54-2 Clause 7.11.1 d).

- A panel can be configured to automatically silence and reset from the alarm condition. This is non-compliant with EN54-2 Clause 7.8 c).

- The time is takes to automatically reset from the alarm condition can be configured to be less than 5 minutes (shown below). This is non-compliant with EN54-2 Clause 7.12.2 d).



- It is possible for MCPs to be included in Dependencies A & B (shown below). This is non-compliant with EN54-2 Clauses 7.12.1 & 7.12.2.



- Setting the operation mode of an Input Group to '2 Devices' creates a double-knock scenario that could potentially make the panel non-compliant with EN54-2.

- Caution should be taken when programming any Action Sequence other than the 10 defaults provided, as it is possible to program an action that is non-compliant with EN54-2.

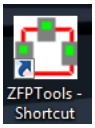
- When utilising Function Switches it is important to note that the CIE is driven by the event as opposed to the state. As a result, the use of multiple Function Switches to change the panel's mode of operation may result in some confusion if care is not taken to reset the state of the Function Switch(es).

1 Installing ZTOOLS

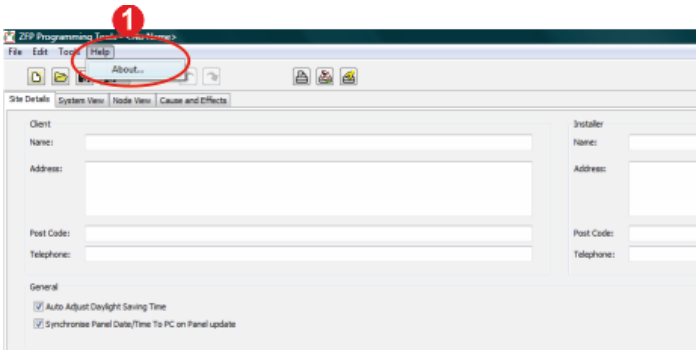
First, you will need to install the ZFP Programming Software (ZTOOLS) on your PC/laptop to enable communication with the ZFP panel.

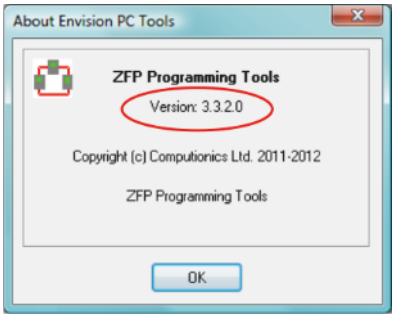
The ZTOOLS is supplied with an installation CD and USB connector lead. The software is compatible with Windows XP/Vista/7/8 operating systems and also works using Virtual PC on a MAC.

- To install the software, insert the installation CD into the laptop's CD ROM drive and follow the on-screen prompts. When installed, open the Desktop icon 'ZTOOLS'.



- Please ensure the latest version of the ZTOOLS is installed on your laptop.
  Note: To check the version of software installed, open the ZTOOLS and click **Help** > **About…** (shown below):



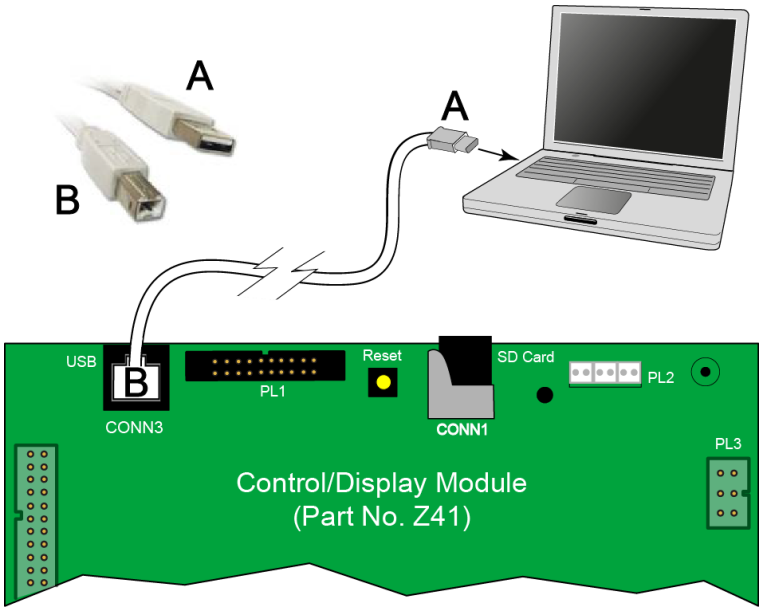


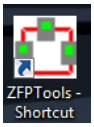
Be sure to register your system on our website *(www.c-tec.co.uk/register)* and we will keep you informed of any software updates.

2 Connecting the PC/Laptop

You will need to connect your laptop to the ZFP panel.

- Connect the laptop to CONN3 on the panel's Z41 (Control/Display Module) using the supplied USB 'A to B' connector lead (shown below). Note that the USB connectors are galvanically isolated to prevent earth faults.



- Next, open the ZTOOLS. 

After installing the ZTOOLS and connecting the PC/laptop to the ZFP panel, the necessary drivers will install automatically. If this is not the case, refer to the next section.

3 Manually Installing the ZTOOLS Drivers (if required)

Skip this section if driver installation was completed automatically.

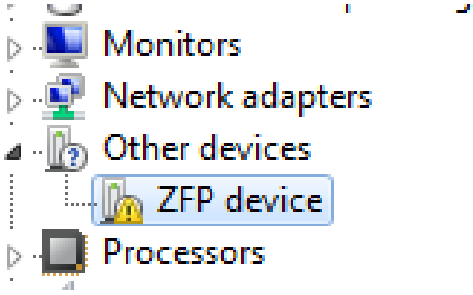
In most cases, after installing the ZTOOLS and connecting the PC/laptop to the ZFP panel, the drivers necessary to allow data to be sent and received will install automatically.

However, in rare cases, particularly 64-bit systems, the first time install may stall. In these cases it is necessary to point out the location of the drivers so that the install can happen.

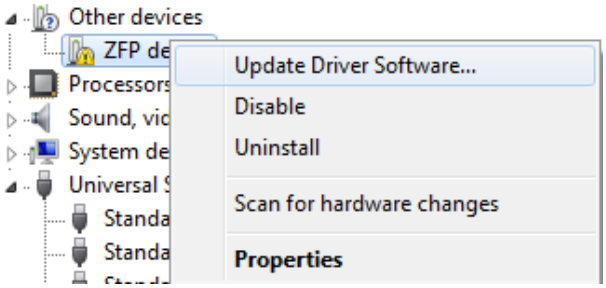
To do this, first open the laptop's **Device Manager**.

If you are unsure on how to do this, refer to Section 3.1 'Opening Device Manager in different Operating Systems'.

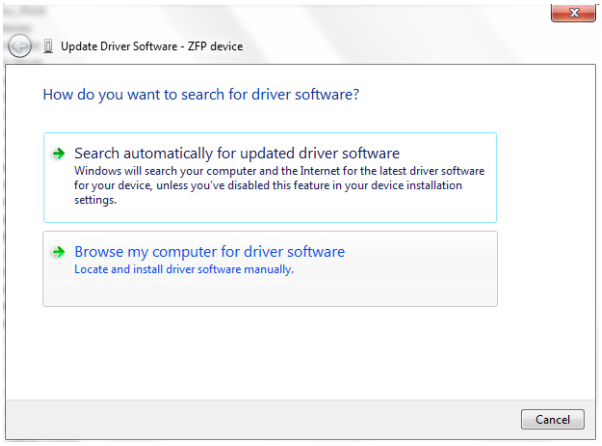
If the driver has not been installed automatically there will be a yellow triangle with a black exclamation mark next to '**ZFP device**' (shown below):



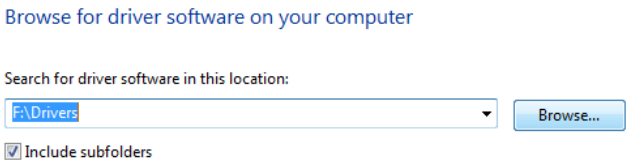
Right-click on '**ZFP device**' and click '**Update Driver Software…**' (shown below):



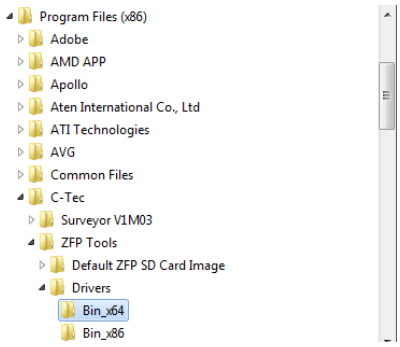
Select '**Browse my computer for driver software**' (shown below):



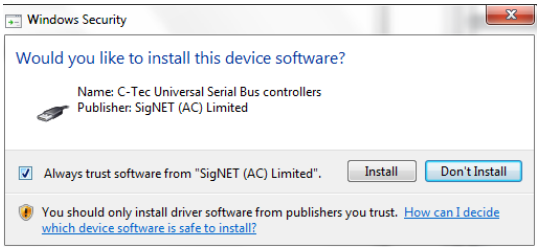
To navigate to the correct location click the '**Browse…**' button (shown below):



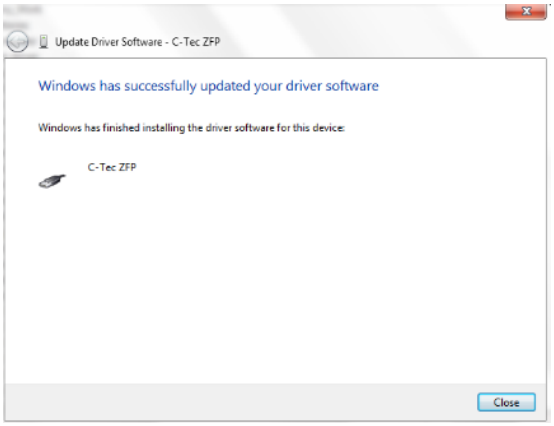
From here you will need to select the following folder location for the drivers '**C:\Program Files (x86)\C-Tec\ZFP Tools\Drivers\Bin_x64**' (shown below):



Once the correct folder has been selected click the '**OK**' button to go back to the previous screen. Notice now that the correct location is listed in the Search Box. Click the '**Next**' button to proceed. During the install, Windows Security may ask for confirmation to install. Ensure the '**Always trust software…**' box is ticked and click the '**Install**' button (shown below):



After the install is successful, the following confirmation will be displayed (shown below):



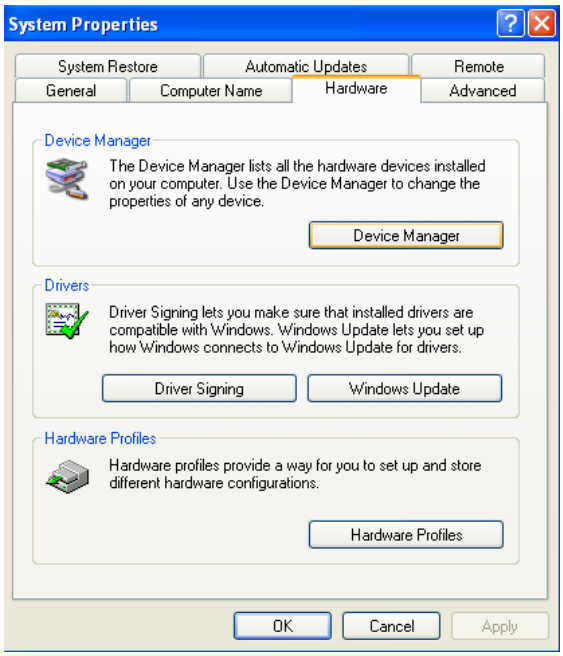
3.1 Opening Device Manager in different Operating Systems

3.1.1 Windows XP

Click the '**Start**' button

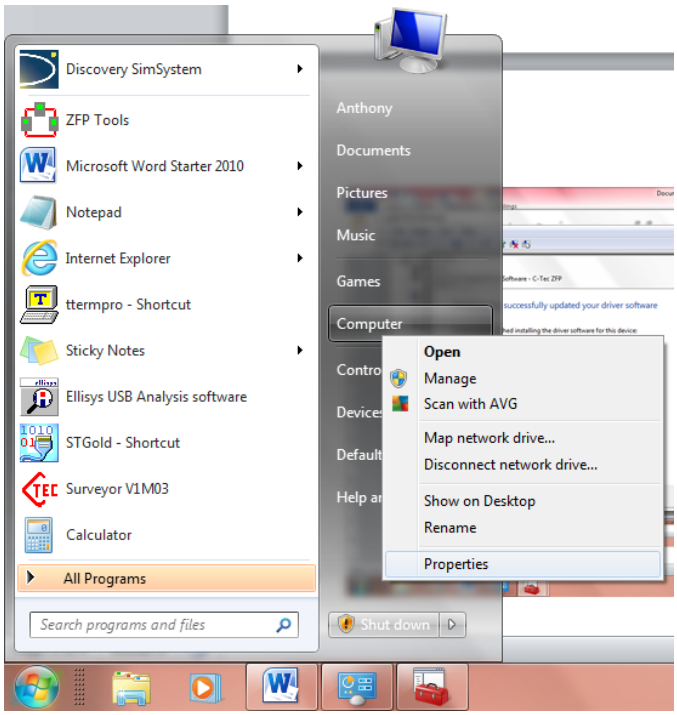
, right-click on '**My Computer**' and select '**Properties**' (shown below):

From here select the '**Hardware**' tab and click the '**Device Manager**' button (shown below):

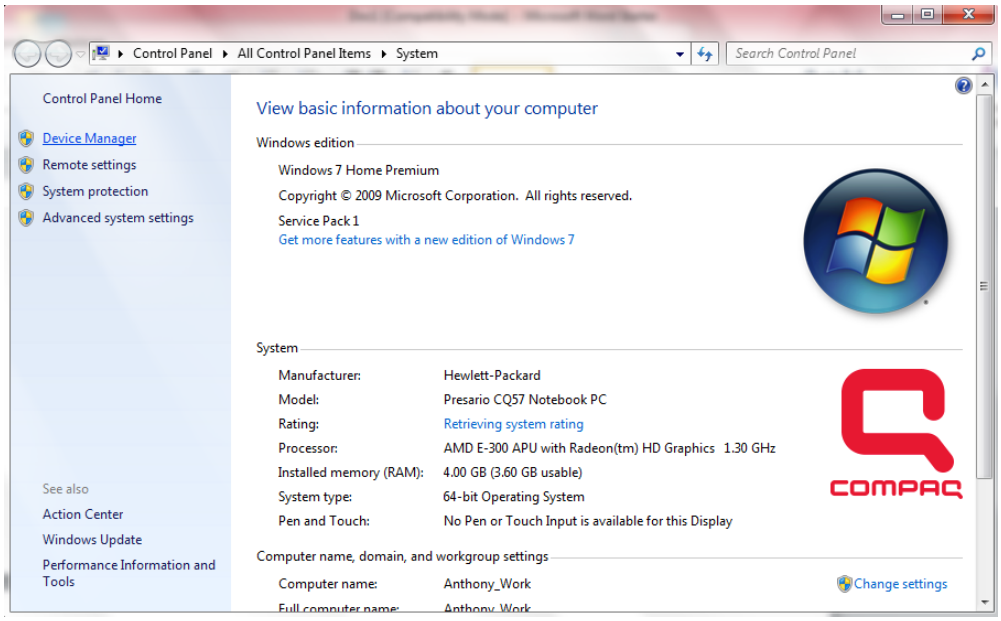


3.1.2 Windows 7

Click the '**Start**' button , right-click on '**Computer**' and select '**Properties**' (shown below):



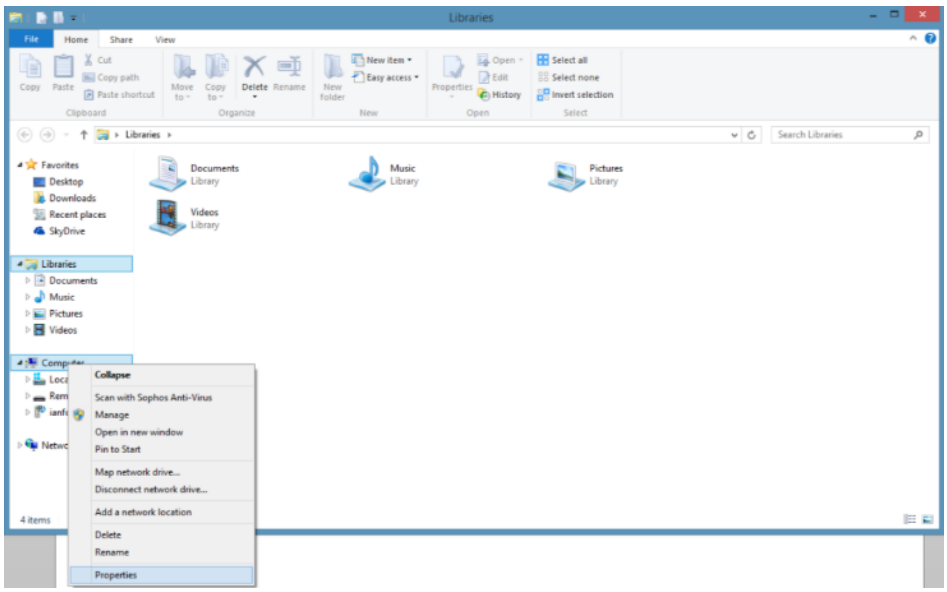
Select '**Device Manager**' from the list on the left hand side (shown below):



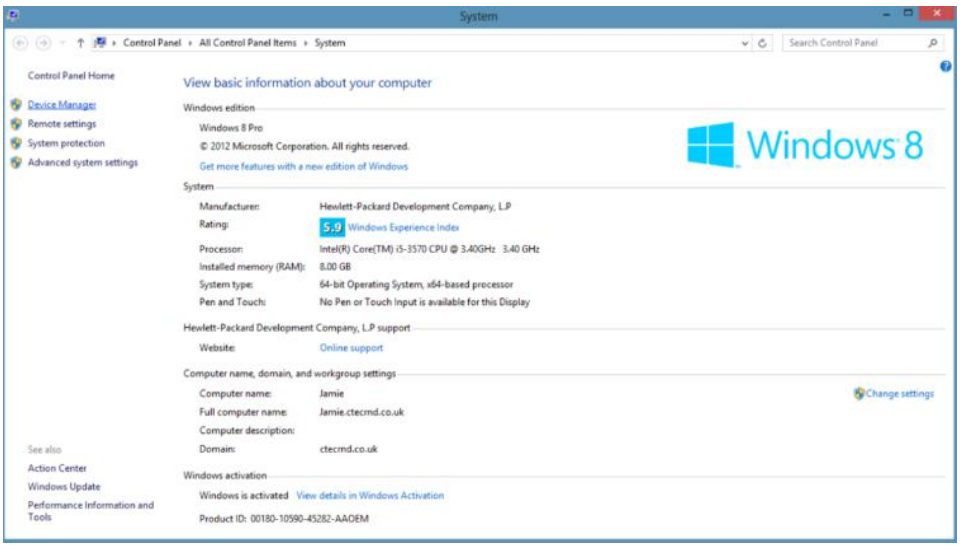
3.1.3 Windows 8

From the bottom Toolbar click the '**File Explorer**' link (shown below):

Right click on '**Computer**' and select '**Properties**' (shown below):



Select '**Device Manager**' from the list on the left hand side (shown below):



4 ZFP Programming Overview

The intention of this programming guide is to provide people with the knowledge to program 90% of ZFP systems and have the confidence to explore the ZTOOLS and work things out for themselves.

Before programming, you should have already set up your PC/laptop with the ZTOOLS (with necessary drivers) and connected it to the 'powered up' ZFP panel enabling communication.

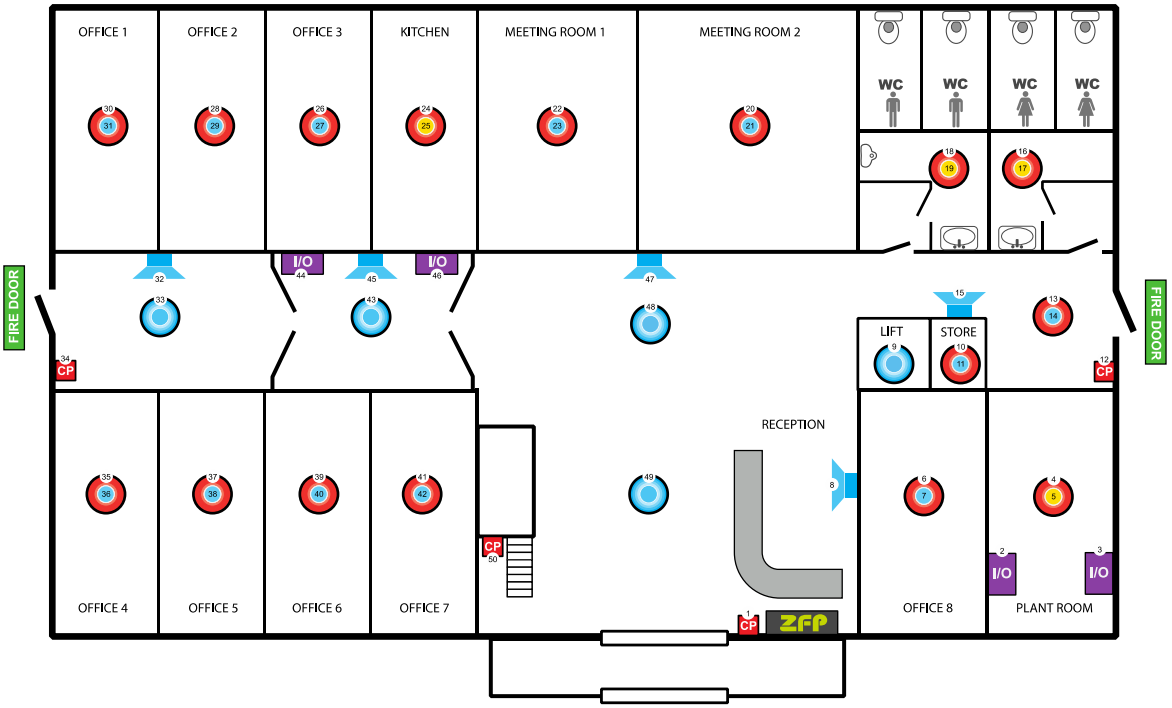
The ZFP Programming procedure is detailed in the following sections and a summary is listed below:

- Configuration concept
- Loop learn at the panel
- Retrieving the panel's data
- Viewing and naming devices
- Naming zones
- Entering site details/uploading logo
- Sending the config data to the panel (one out, all out system set up)
- Splitting a system into zones
- Allocating zones to devices
- Zone summary (one out, all out zoned system set up)
- Default cause and effects
- Default input groups
- Default output groups
- Default action sequences
- Worked C&E examples

5 The ZFP Configuration Concept

- The ZFP panel uses new concepts aimed at making system programming as straightforward as possible.
- Up to 64 networked, eight loop panels operating at full capacity = 512 loops, 64,512 devices and 12,800 zones.
- Delays, phased evacuation, dependencies to outputs, operation modes, smoke extraction control, etc., are all common requirements.
- Requirements/variations may change many times before, during and after system handover.
- The ZFP has very powerful Cause & Effect (C&E) programming capabilities that are very easy to use.
- Setting up an initial ‘one out, all out’ system is simplicity itself.

6 Building Layout - Worked Example



- Zones can be allocated across networked panels.
- With the ZFP the term ‘zone’ relates only to the geographical location of field devices (inputs or outputs) for control panel indication purposes.

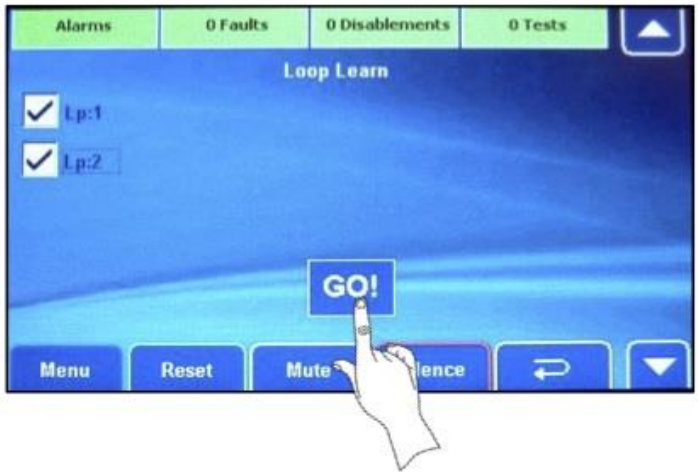
7 Loop Learn at the Panel

First, you need to find out what devices are installed on the fire alarm system and get this information into the ZTOOLS on your laptop.

To do this carry out a 'loop learn' at the ZFP panel. Note: The default code for access level 3 is **4444**.

- Enter **Access Level 3** > **Commissioning Functions** > **Loop Learn**.
- Select the loop(s) you want the panel to learn and press the '**GO**' button (shown below).

  A progress bar is displayed during the loop learn process.

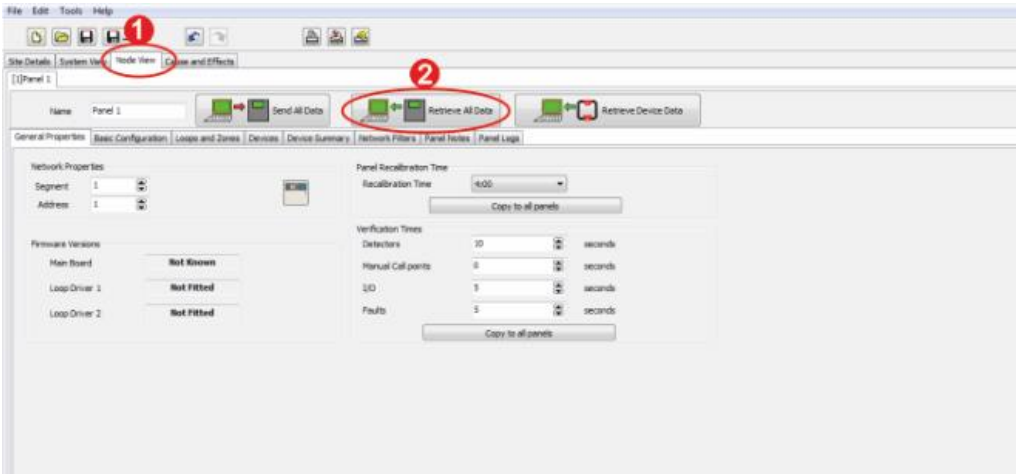


AFTER A SUCCESSFUL LOOP LEARN YOU WILL HAVE A 'ONE OUT, ALL OUT' FIRE ALARM SYSTEM.

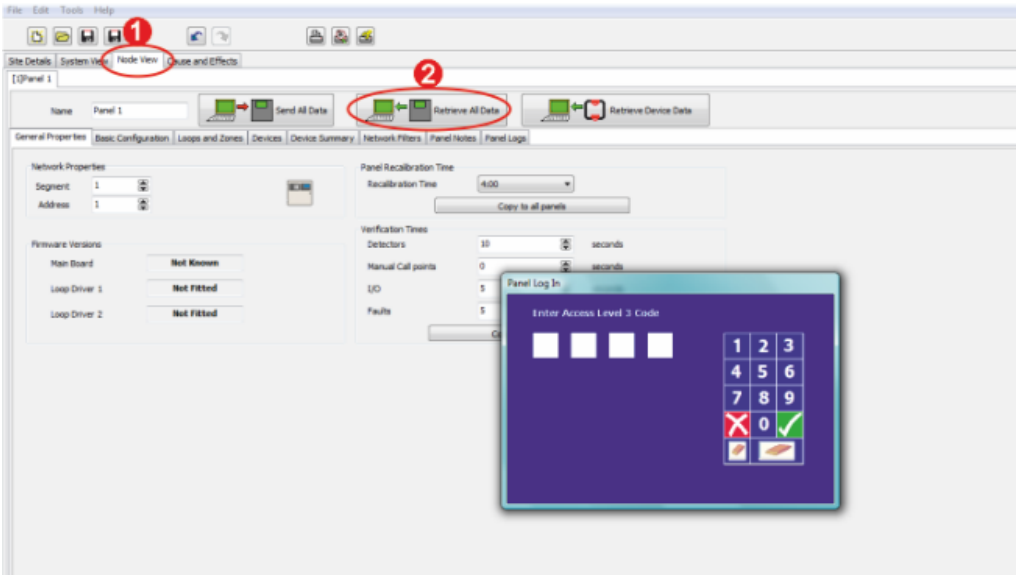
8 Retrieving the Panel's Config Data

You now need to transfer the 'loop learn' data from the ZFP panel to the laptop.

- At the laptop, open up the ZTOOLS and click **Node View** > **Retrieve All Data** (shown below):



- When prompted, enter the AL3 code (shown below). Note the default code is **4444**.



All device data from the panel will download into the ZTOOLS.

8.1 Saving and Opening Site Configuration Files

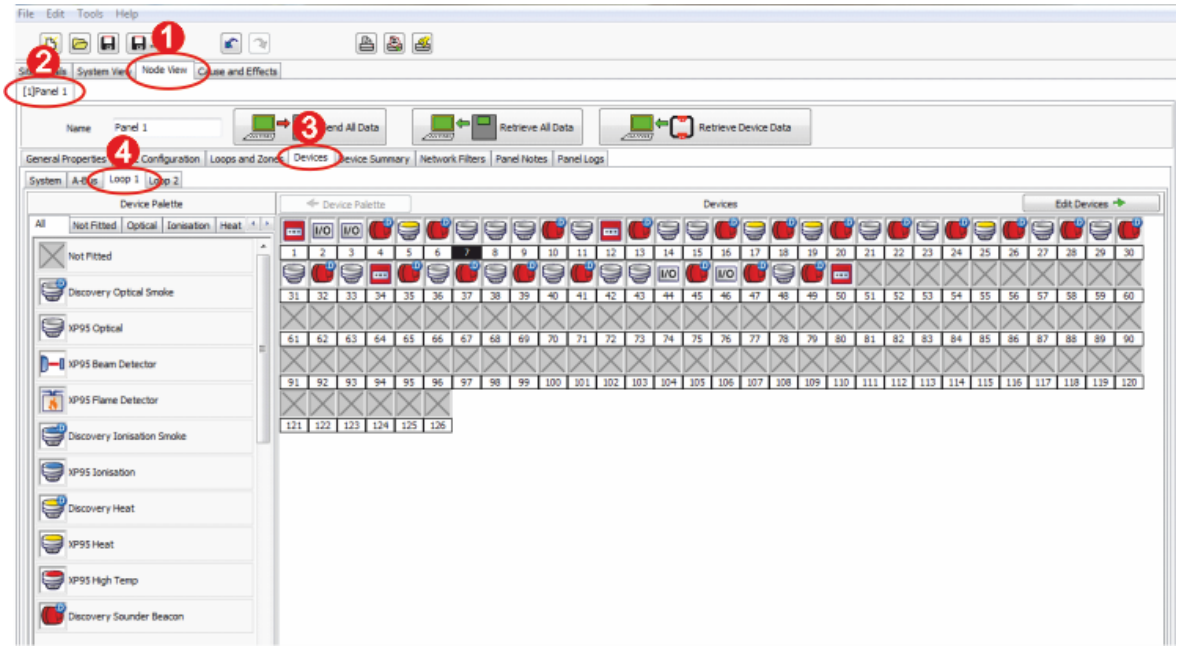
Site configuration files, which include device settings and any notes entered, may be opened from, and saved to, a connected laptop by clicking the **Open** and **Save** buttons at the top of the main screen. Note that by default, the ZTOOLS saves Config files with a '**.zfp**' extension.

When you have the 'loop learn' data in the ZTOOLS, create a suitable filename, e.g. 'SiteName_date.zfp' and save that information on the laptop.

9 Viewing the Devices

After the 'loop learn' data has been downloaded to the laptop, the loop devices are automatically populated in the ZTOOLS.

- To view the loop devices, click **Node View** > **Panel 1** > **Devices** > **Loop 1** (example shown below):



This screen gives a visual representation of all the loop devices in icon form.

In the above example, Loop 1 Address 1 (L:1 A:001) is a Call Point, L:1 A:002 is an I/O Unit, L:1 A:003 is an I/O Unit, L:1 A:004 is a Discovery Sounder beacon, L:1 A:005 is an XP95 Heat Detector, etc.

Note that 'D' = Apollo's Discovery protocol.

Next we are going to look at the default settings for these devices.

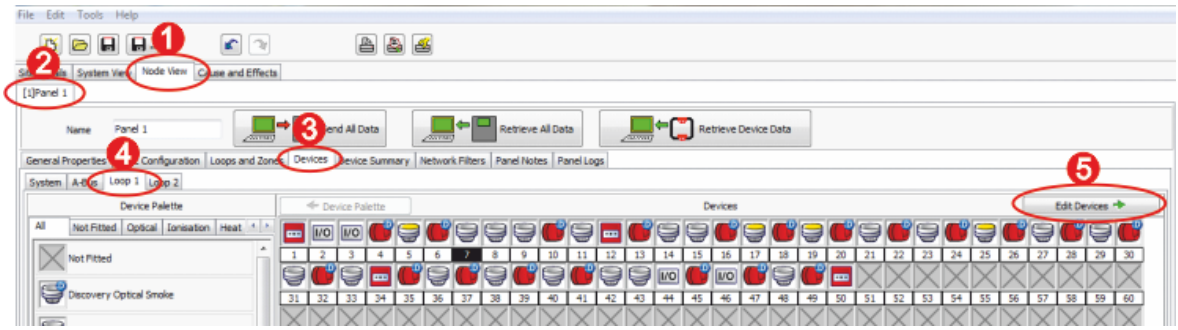
Note this is very similar to the Device Manager display at access level 3 on the ZFP panel!

The next two sections explain how to name the devices.

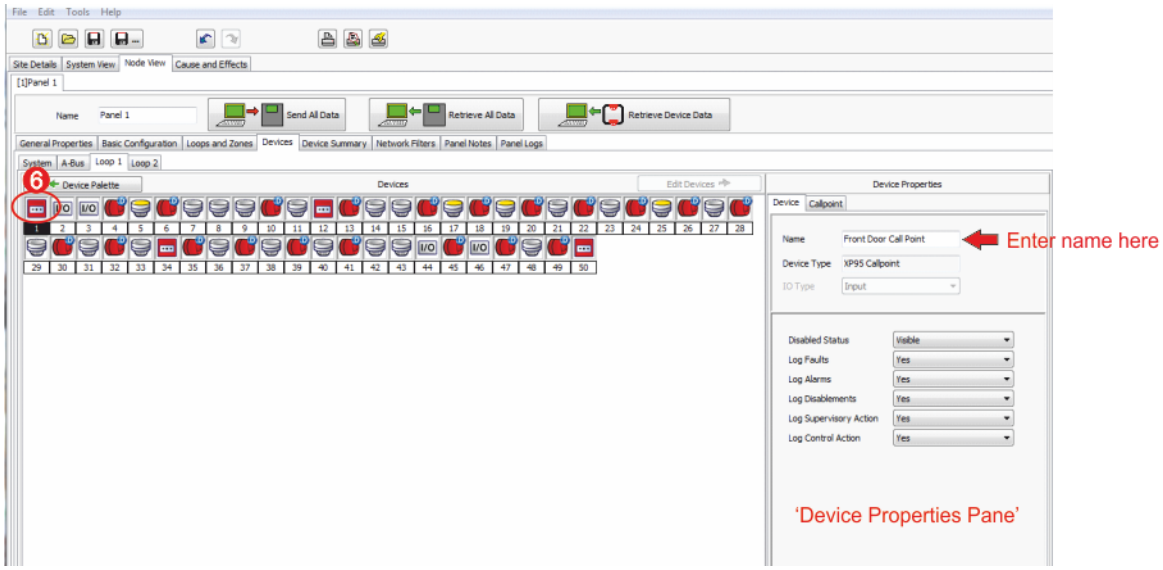
10 Naming the Devices (Option 1)

WORKED EXAMPLE: Name 'Loop 1 Device 1' as a 'Front Door Call Point', then name the rest of the loop devices.

- Click **Node View** > **Panel 1** > **Devices** > **Loop 1** > **Edit Devices** (shown below):



- Click the Call Point icon located at Loop 1 Device 1 (shown below):



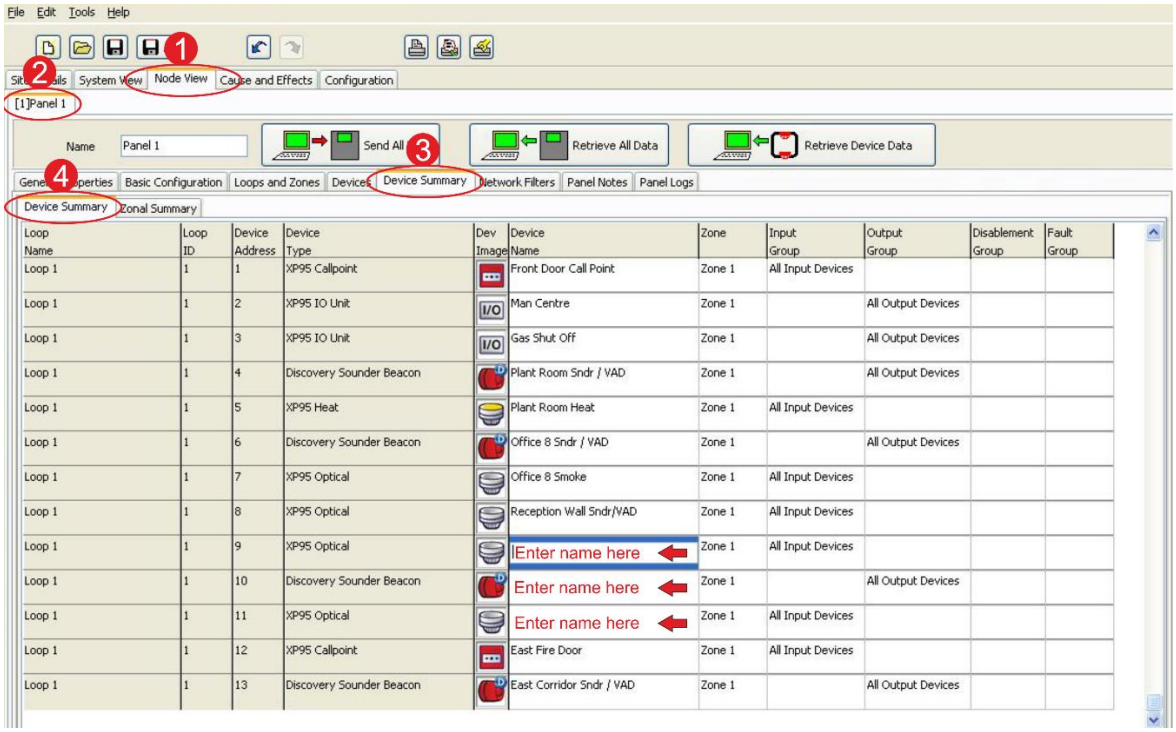
- In the Device Properties Pane, click **Device** tab and enter '*Front Door Call Point*' in the **Name** field (shown above).
- Repeat this naming procedure for the remaining loop devices.

Important Point – Depending on the device type there may be a number of tabs in the Device Properties Pane. In the call point example shown above, there is the Device tab and Callpoint tab. WHEN NAMING THE DEVICE ONLY USE THE 'NAME' FIELD UNDER THE DEVICE TAB. IT IS NOT NECESSARY TO NAME THE DEVICE IN EVERY OTHER TAB!

11 Naming the Devices (Option 2)

WORKED EXAMPLE: Name 'Loop 1 Device 9' as 'Lift Shaft Smoke', 'Loop 1 Device 10' as 'Stores Sndr/VAD and 'Loop 1 Device 11' as 'Stores Sndr/VAD'.

- Click **Node View** > **Panel 1 > Device Summary** > **Device Summary** (shown below):



- In the Device Name column, click in the device 9 field and enter its name (shown above).
- Repeat this naming procedure for the remaining loop devices.

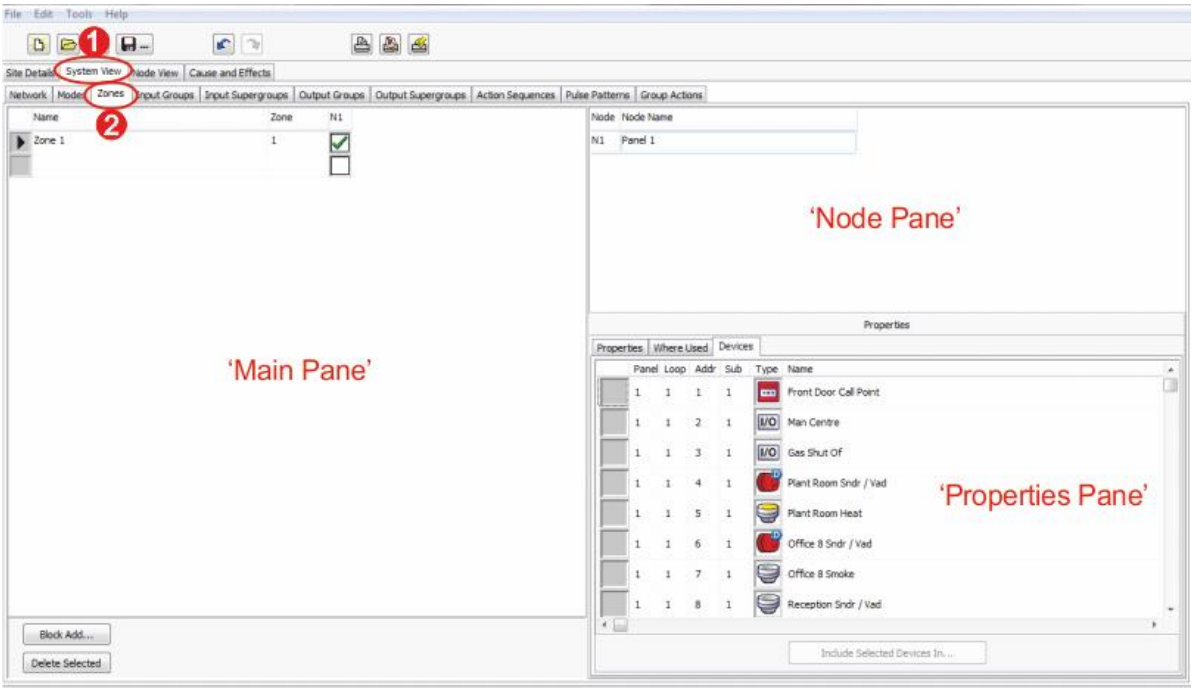
Using the Device Summary screen, you can also allocate devices to different zones, input groups and output groups which is covered later in this document.

12 Naming the Zones

A zone is defined as a single geographical location on a site. A single ZFP panel can have a maximum of 200 zones. By default, one zone, i.e. Zone 1, is created by the ZTOOLS.

WORKED EXAMPLE: Name the Zone: 'Zone 1 – Ground Floor'.

- To view the default zones, click **System View** > **Zones** (shown below):



In the Main Pane, you can see that Zone 1 is set up by default. Note that 'N1' (Node 1) is named Panel 1 by default, which is shown in the Node Pane.

- Click in the Name column in the Main Pane to change the zone name to 'Zone 1 – Ground Floor'.

Three sub-tabs are available in the Properties Pane:

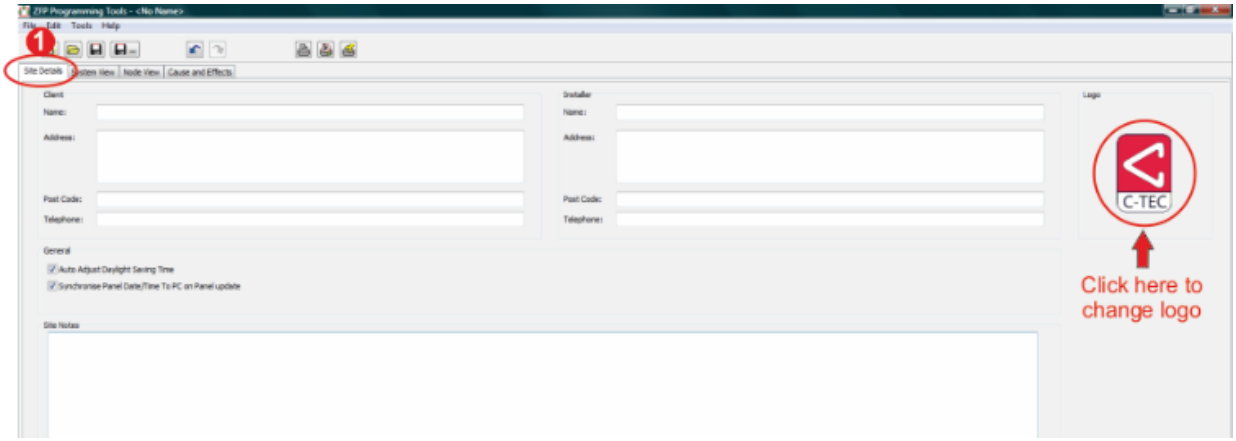
1. Properties: Disablement Activates – Select an Input Group to be triggered after a disablement.
2. Where Used: Shows the parts of the C&E tree this particular element is used.
3. Devices: Shows the devices that are assigned to this particular element.

13 Entering the Site Details/Uploading Custom Logo

No site details are entered by default in the ZTOOLS, therefore the installer needs to enter the relevant information.

WORKED EXAMPLE: Enter the site details and upload a custom logo.

- To view the site details, click **Site Details** (shown below):



- Enter the relevant site details.

The main details on the site details screen are:

- Client's details, i.e. the site address, etc.
- Installer's name, i.e. your details.
- Default Logo. Note: A custom logo can be uploaded, e.g. from a USB stick, by clicking the default logo (shown above). This may be a company logo '.gif' file up to 150 x 150 pixels in size. The logo is displayed on the panel's touchscreen when it is in quiescent mode.

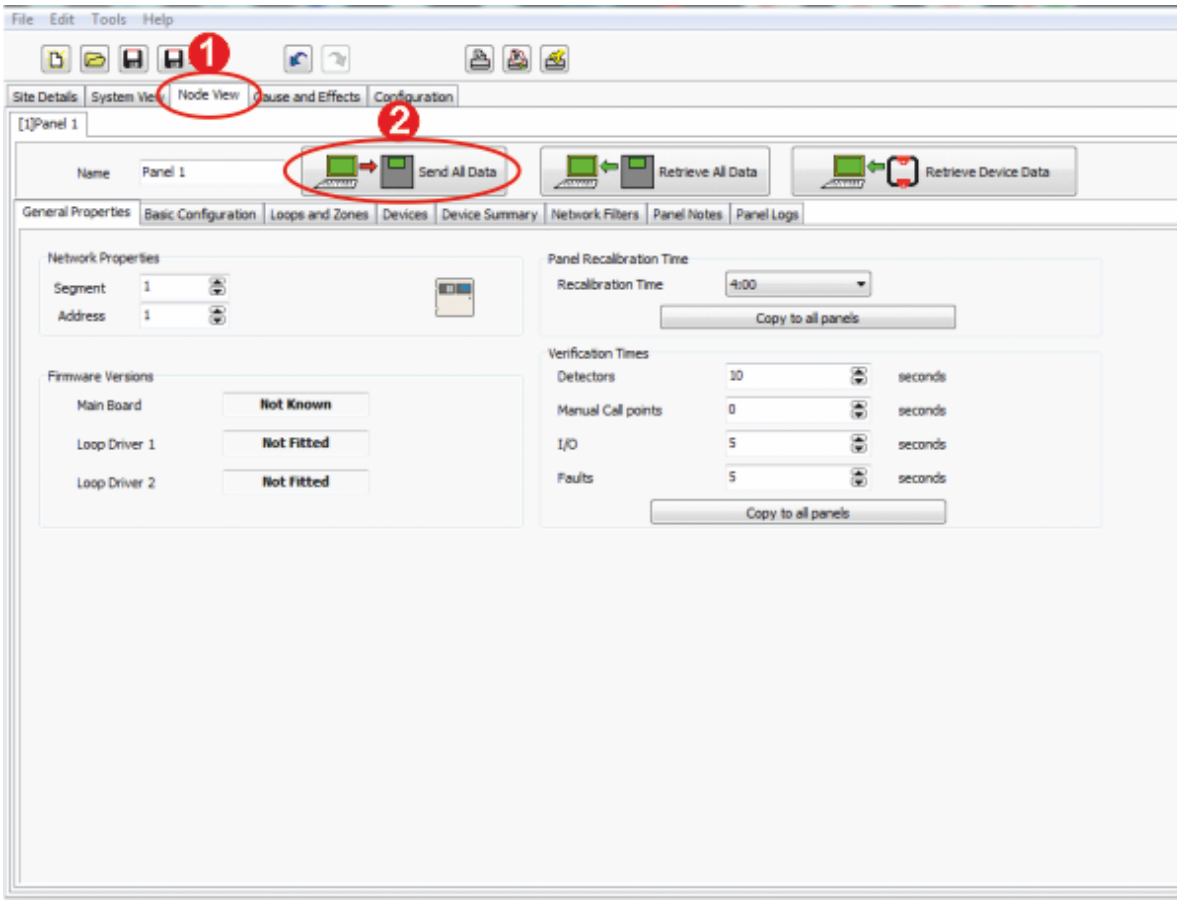
The site details screen also has the following details:

- Auto Adjust Daylight Saving Time - Auto updates the ZFP panel's real-time clock for UK summer/winter time. Default setting is on.
- Synchronise Panel Date/Time to PC on Panel Update - Default setting is on.
- Site Notes - Use this area to list important site specific details, this is purely saved to the site config file on the laptop.

14 Sending the Config Data to the Panel

Remember to save the completed site config file to your laptop (refer to Section 8.1).

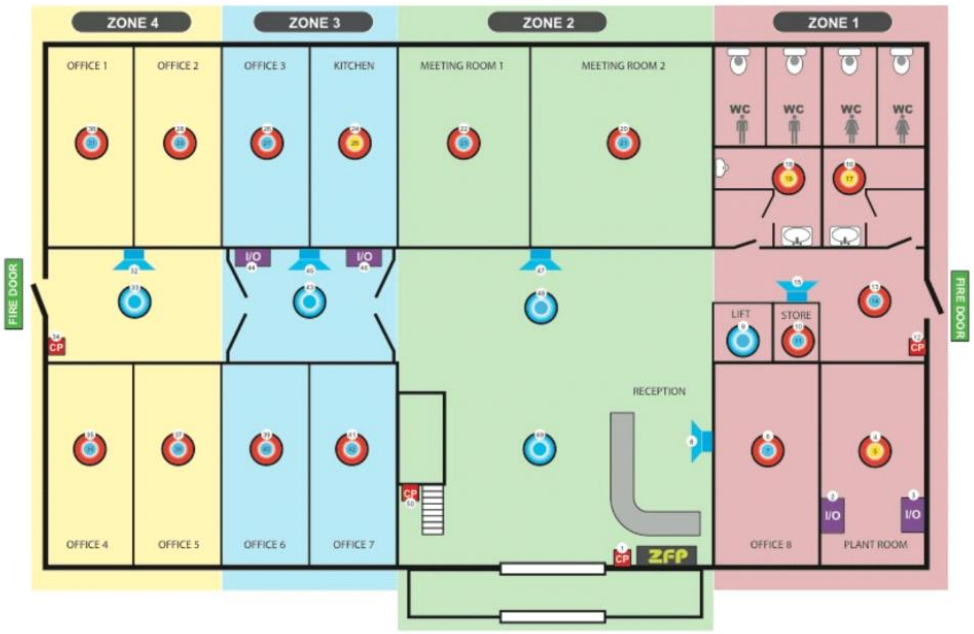
Once you have completed the site configuration, click **Node View** > **Send All Data** (shown below):



YOU NOW HAVE A NAMED, 'ONE OUT, ALL OUT' FIRE ALARM SYSTEM.

15 Splitting a System into Zones

In the example site plan, we have one ZFP panel (Panel 1/Node 1) connected to field devices on one loop (Loop 1) across four fire zones (Zones 1, 2, 3, 4).

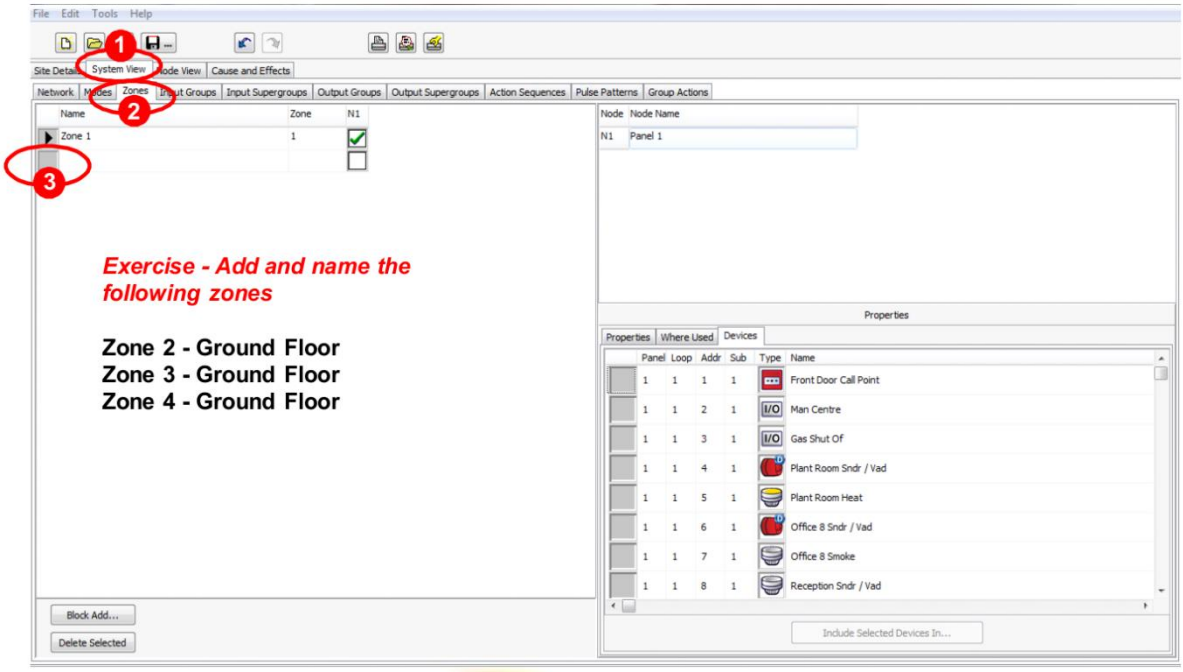


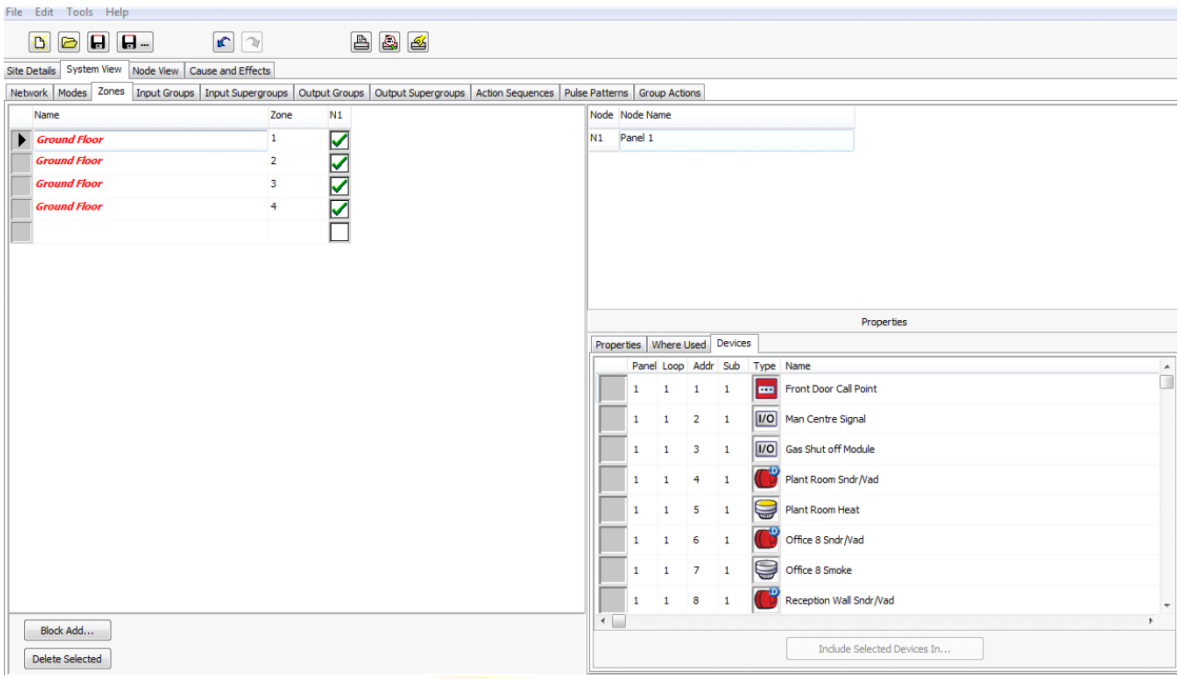
KEY

ZFP - ZFP Panel | - Smoke Detector | - Heat Detector | - Detector

- Sounder, VAD | I/O - Input/Output Unit | CP - Call Point

WORKED EXAMPLE: Add and name the following zones, as shown on the example site plan: Zone 1 – Ground Floor, Zone 2 – Ground Floor, Zone 3 – Ground Floor, Zone 4 – Ground Floor.

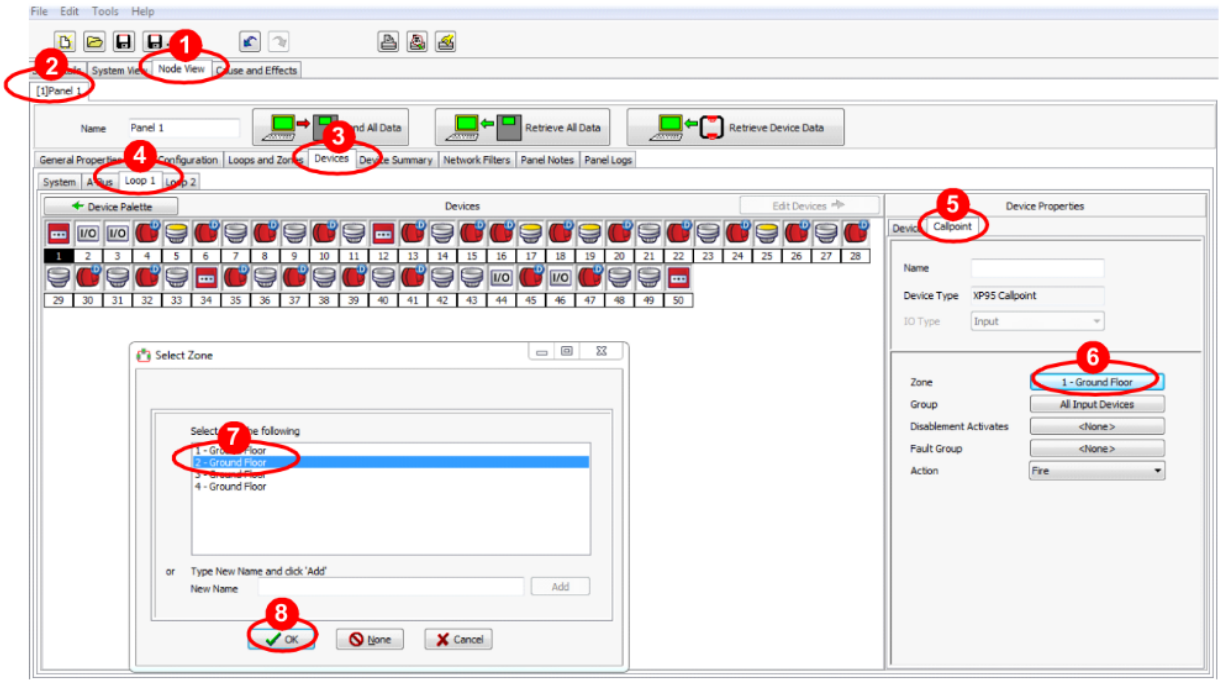




16 Allocating Zones to Devices

WORKED EXAMPLE: Allocate zones to devices as per the example site plan.

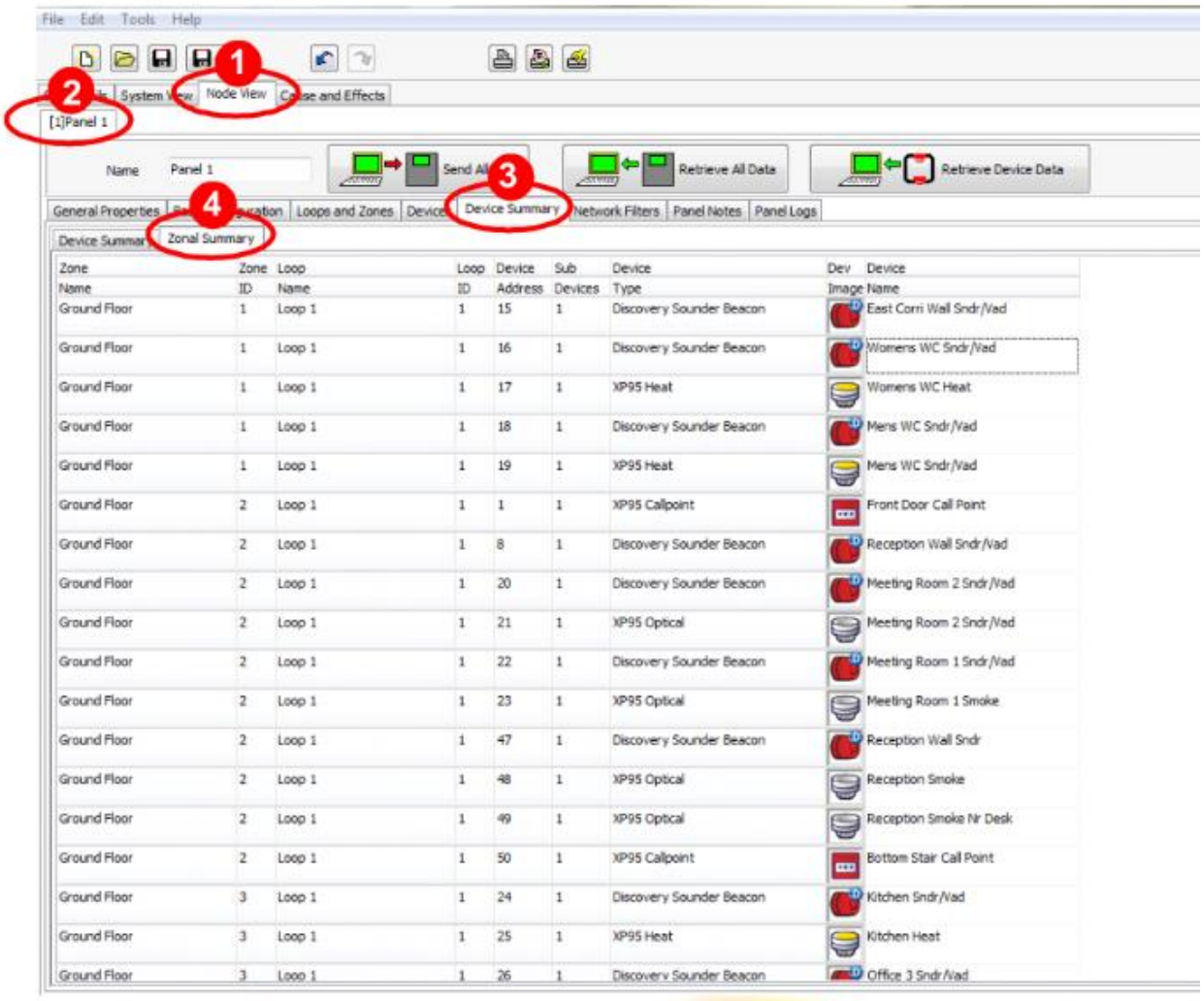
Note that you can also allocate zones to devices using the Device Summary screen (refer to section 11).



17 Zone Summary

Note: You can't change anything on the Zonal Summary screen, it is just a summary screen!

- To view the Zonal Summary screen, click **Node View** > **Panel 1** > **Device Summary** > **Zonal Summary** (shown below):



The config data can now be sent to the panel as shown in Section 14.

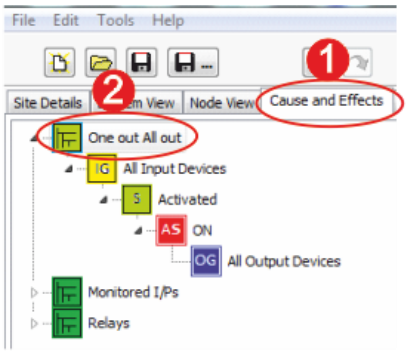
YOU NOW HAVE A NAMED, ZONED, 'ONE OUT, ALL OUT' FIRE ALARM SYSTEM.

18 Cause & Effect (C&E) Programming

- Instead of using 'Zones' for programming purposes the ZFP uses **Input Groups** and **Output Groups**.
- An **Input Group (IG)** is a set of input devices programmed to operate in a particular manner NOT limited by the physical structure or zonal separation of a building.
- An **Output Group (OG)** is a set of output devices programmed to operate in a particular manner NOT limited by the physical structure or zonal separation of a building.
- A **Zone** is a geographical location of field devices. A Zone is a set of Input Groups (usually one) and Output Groups that you want to indicate at the CIE. A Zone can be allocated across networked panels.
- By default, detectors & call points are assigned to **Input Group 1**, sounders, VADs & interfaces are assigned to **Output Group 1**. Note an IO unit can be used for inputs and outputs, or both. In most instances they are mainly output devices.
- The ZFP's default 'one out, all out' cause and effect is for the activation of any input device (IG1) to switch on all output devices (OG1).

18.1 Default C&E Settings - One Out, All Out

- To view the panel's default C&E (One Out, All Out), click **Cause and Effects** > **One out All out** (expanded C&E shown below):



Cause & Effect Starting Block: This is the starting point of a C&E event. Can be expanded to include 'branches' which show the 'flow' of the system.

Input Group: IG's comprise grouped input objects, i.e. detectors, MCPs, interface modules, etc.

States: These are linked to input groups. When an IG enters the state shown it will follow the connecting branch(es).

Action Sequences: These are linked to output groups. Typical Action Sequences include Off, On, Simple Pulse, Mode Change, Enable Input/Output/Zone, Disable Input/Output/Zone.

Output Group: OG's comprise grouped output objects, i.e. sounders, beacons, interface modules, etc.

In this C&E example:

"All Input Devices" (IG1)

when "Activated" (S)

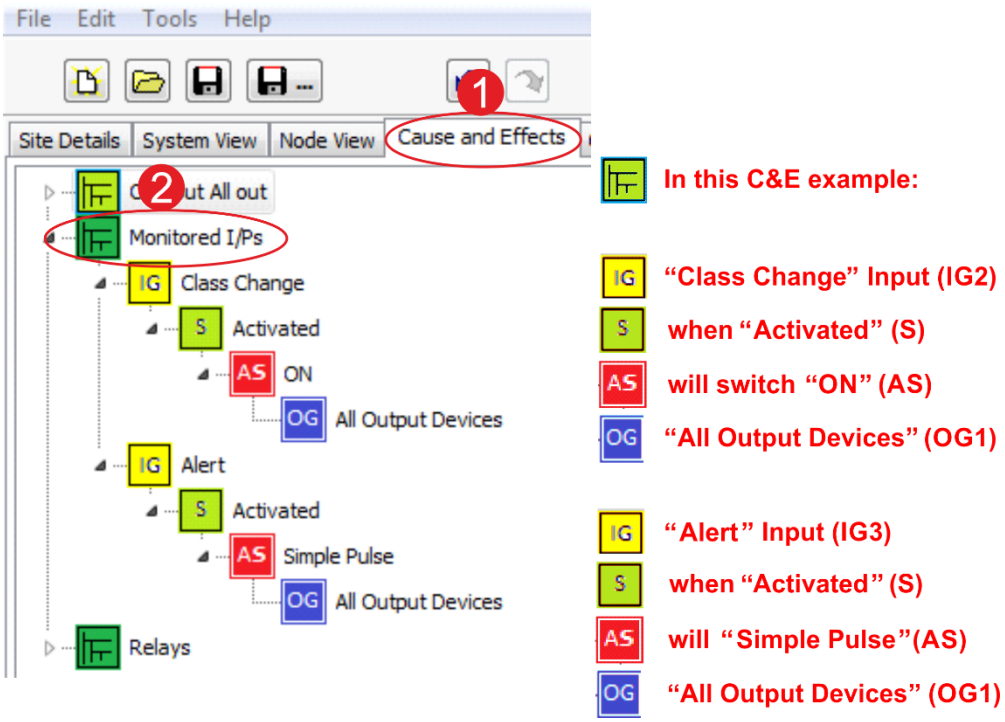
will switch "ON" (AS)

"All Output Devices" (OG1)

(i.e. ONE OUT, ALL OUT)

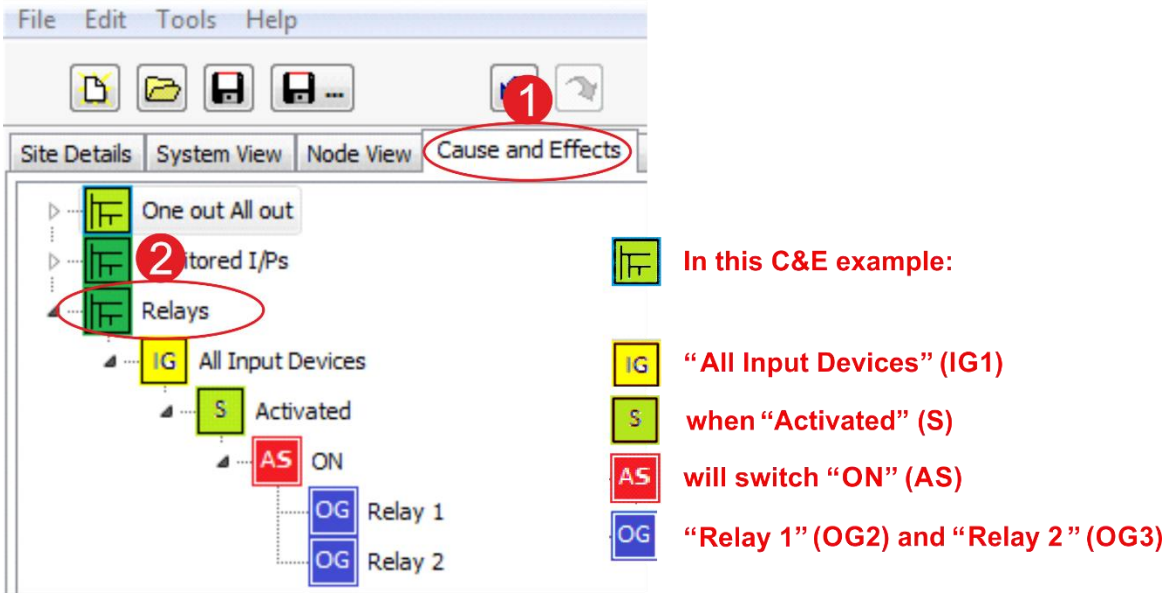
18.2 Default C&E Settings - Panel's Monitored Inputs

- To view the panel's default C&E (Monitored Inputs), click **Cause and Effects** > **Monitored I/Ps** (expanded C&E shown below):



18.3 Default C&E Settings - Panel's Relay Outputs

- To view the panel's default C&E (Relays), click **Cause and Effects** > **Relays** (expanded C&E shown below):

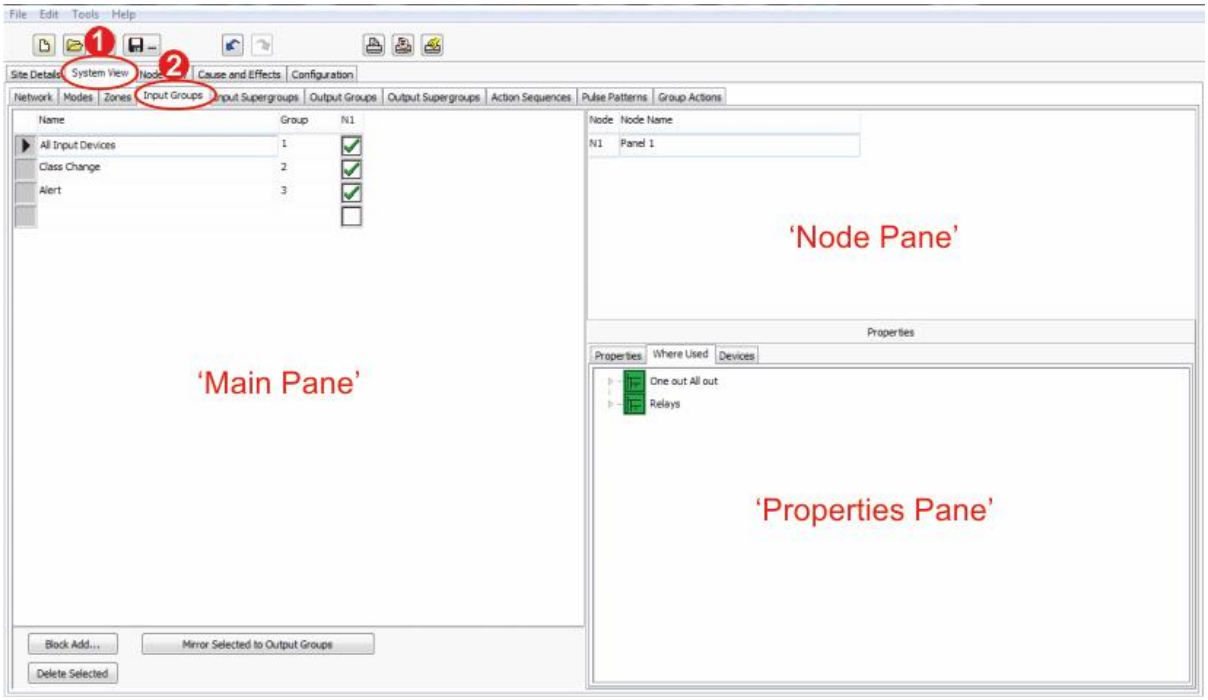


19 Default Input Groups

Input Groups are used in C&E programming and can be assigned to any type of panel input device, e.g. detectors, call points, etc.

By default, three Input Groups are created by the ZTOOLS, i.e. All Input Devices, Class Change & Alert.

- To view the default Input Groups, click **System View** > **Input Groups** (shown below):



- You can add/edit/delete the panel's Input Groups by clicking in the Main Pane, if required.

By default, three sub-tabs are available in the Properties Pane:

1. Properties:

   Disablement Activates – Select an Input Group to be triggered after a disablement.
   Style – Select the style of the Input Group.
   Auto Clear on Panel Reset – Select to automatically clear the activation on a panel reset.
   Output Delays Apply to MCPs – Select to include call points in applying output delays.
   Output Delays Apply to Detectors – Select to include detectors in applying output delays.
   MCP Qualifies Dependencies – Select to have call points ignore dependencies.
   Cancel Delays on Silence? – Select to cancel delays after a panel silence.
   Default Operation – Select the default operation of the Input Group.

2. Where Used:

   Shows the parts of the C&E tree this particular element is used.

3. Devices:

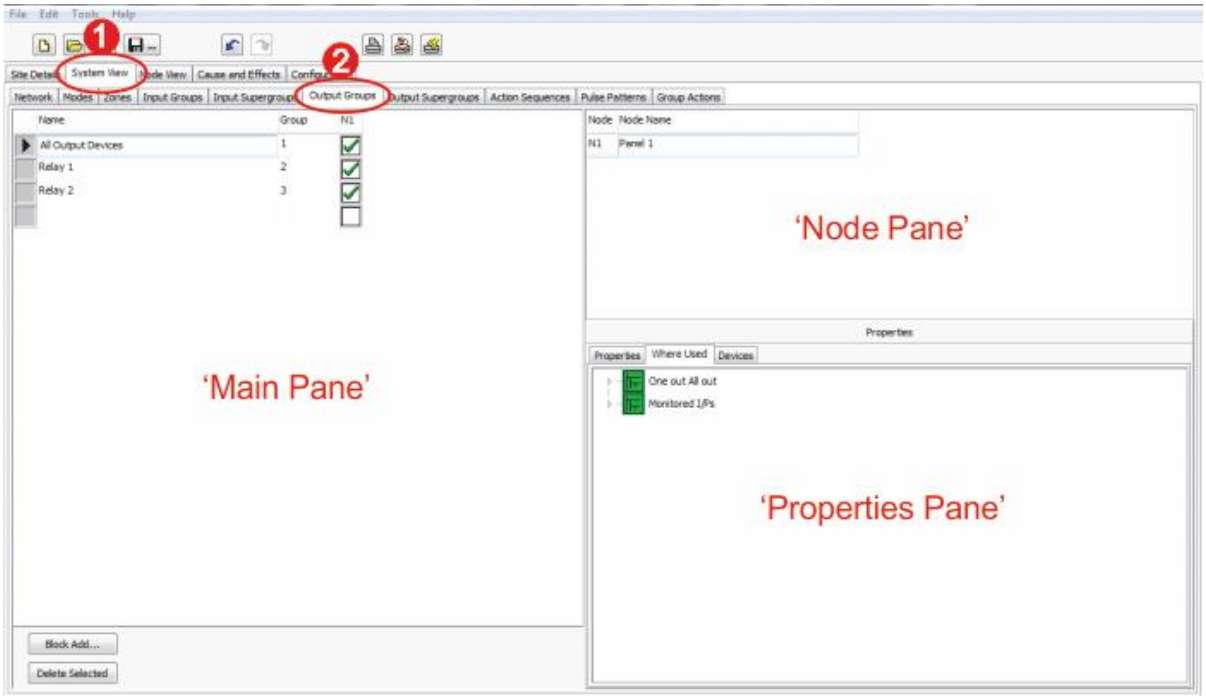
   Shows the devices that are assigned to this particular element.

20 Default Output Groups

Output Groups are used in C&E programming and can be assigned to any type of panel output device, e.g. loop sounders, conventional sounders, VADs, relays, etc.

By default, three Output Groups are created by the ZTOOLS, i.e. All Output Devices, Relay 1 & Relay 2.

- To view the default Output Groups, click **System View** > **Output Groups** (shown below):



- You can Add/Edit/Delete the panel's Output Groups by clicking in the Main Pane, if required.

By default, three sub-tabs are available in the Properties Pane:

1. Properties:

   Disablement Activates – Select an Input Group to be triggered after a disablement.
   Silenceable? – Select to allow the output to be silenced on a panel silence.
   Normalise on Reset? – Select to allow the output to be reset on a panel reset.

2. Where Used:

   Shows the parts of the C&E tree this particular element is used.

3. Devices:

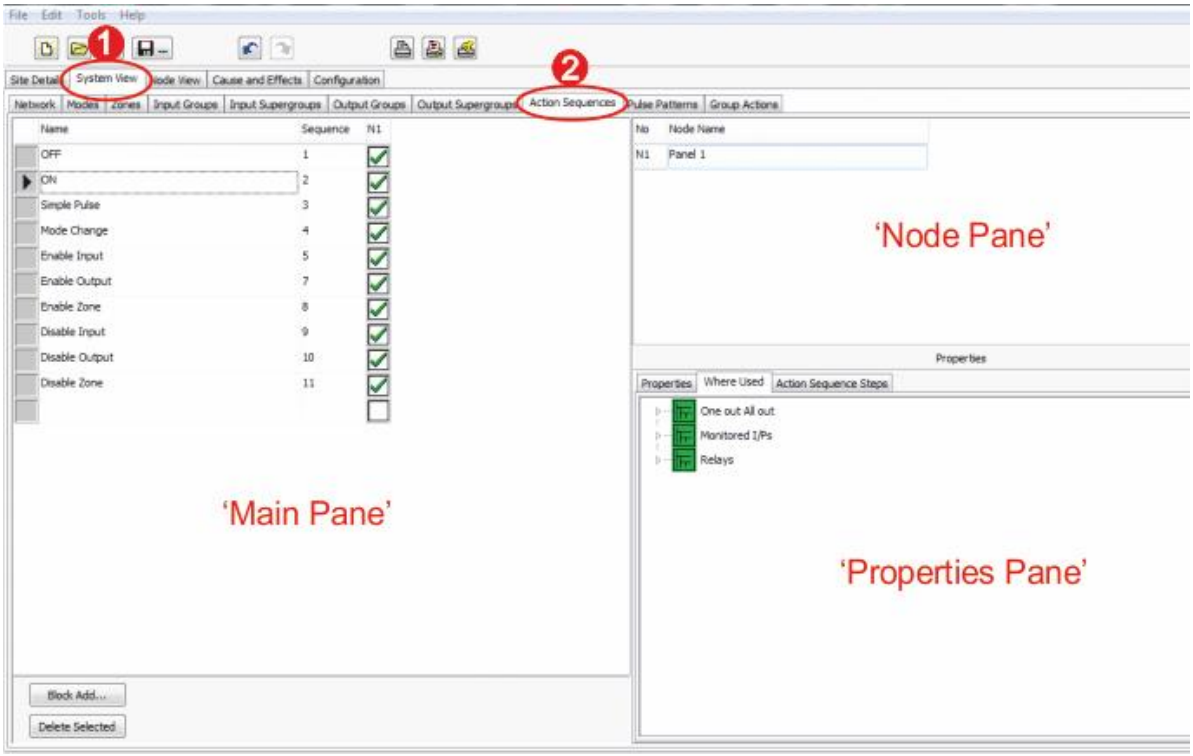
   Shows the devices that are assigned to this particular element.

21 Default Action Sequences

An action sequence is a single, or set of steps, that act on an output object in the C&E tree.

By default, ten sequences are created by the ZTOOLS, i.e. OFF, ON, Single Pulse, Mode Change, Enable Input, Enable Output, Enable Zone, Disable Input, Disable Output & Disable Zone.

- To view the default sequences, click **System View** > **Action Sequences** (shown below):



- You can Add/Edit/Delete the panel's sequences by clicking in the Main Pane, if required.

By default, three sub-tabs are available in the Properties Pane:

1. Properties:

   Priority – Assign a priority factor, higher numbers represent a higher priority.
   Acts On – Assign the type of object the sequence will act upon.

2. Where Used:

   Shows the parts of the C&E tree this particular element is used.

3. Action Sequence Steps:

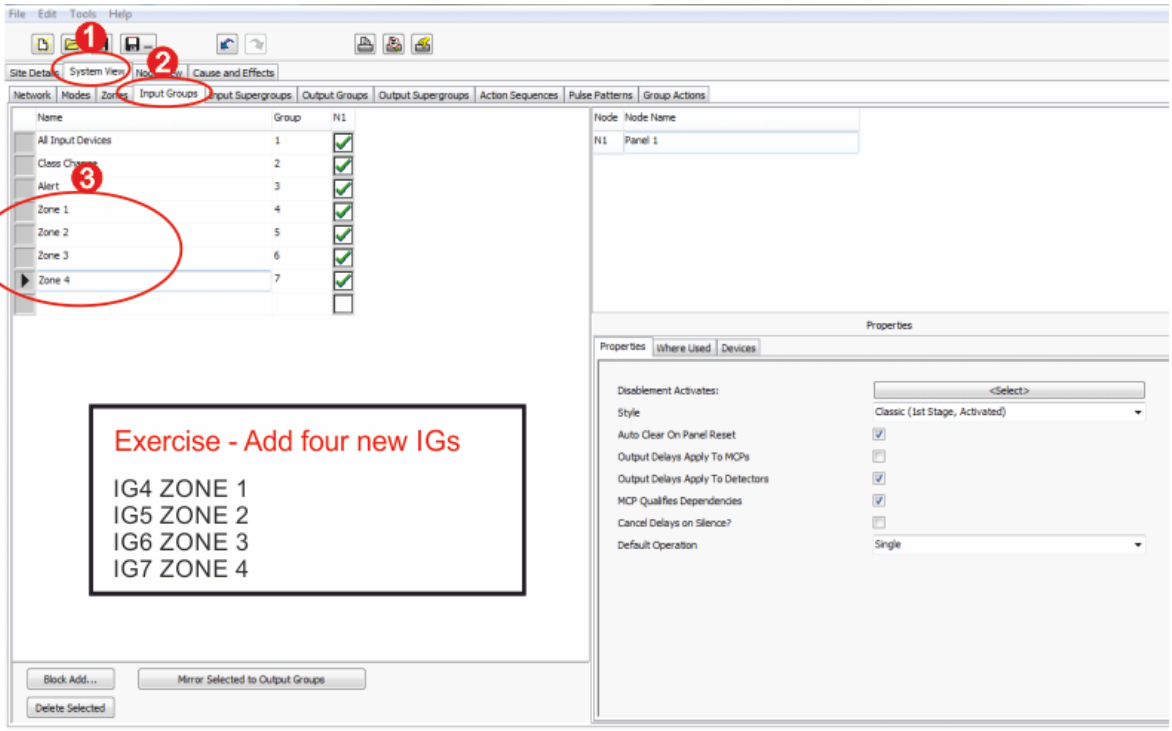
   Add/Edit the sequence steps assigned to this particular sequence.

22 Requirement 1 – Worked Example

- To guard against the unnecessary evacuation of the entire building in the event of a false alarm, it has been decided that:
  a) If a zone goes into fire, only the sounders and VADs in that zone will activate (the sounders and VADs in all other zones will remain silent).
  b) If the fire alarm hasn't been silenced after two minutes, the sounders and VADs in all other zones will activate.
- To do this we need to:
  a) Create four new Input Groups
  b) Create four new Output Groups
  c) Add a 2 minute delay sequence
  d) Build an appropriate C&E tree.

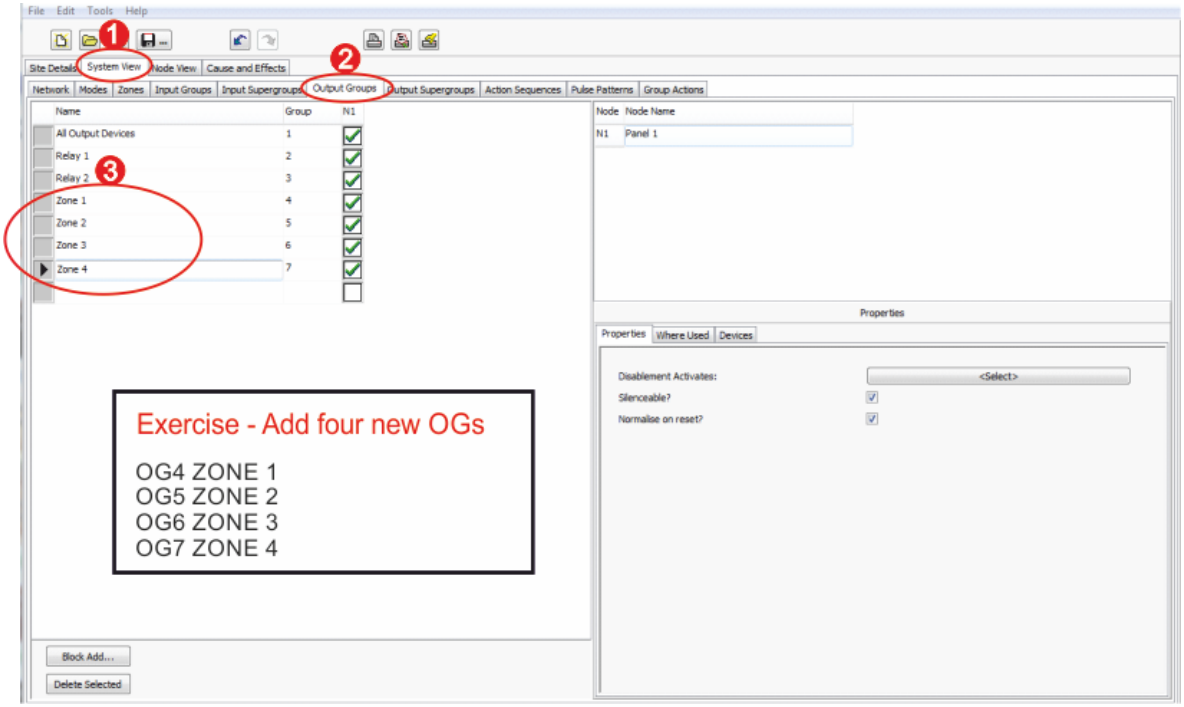
22.1 Adding & Naming Input Groups

- WORKED EXAMPLE: Add four new Input Groups: IG4 (ZONE 1), IG5 (ZONE 2), IG6 (ZONE 3) and IG7 (ZONE 4).



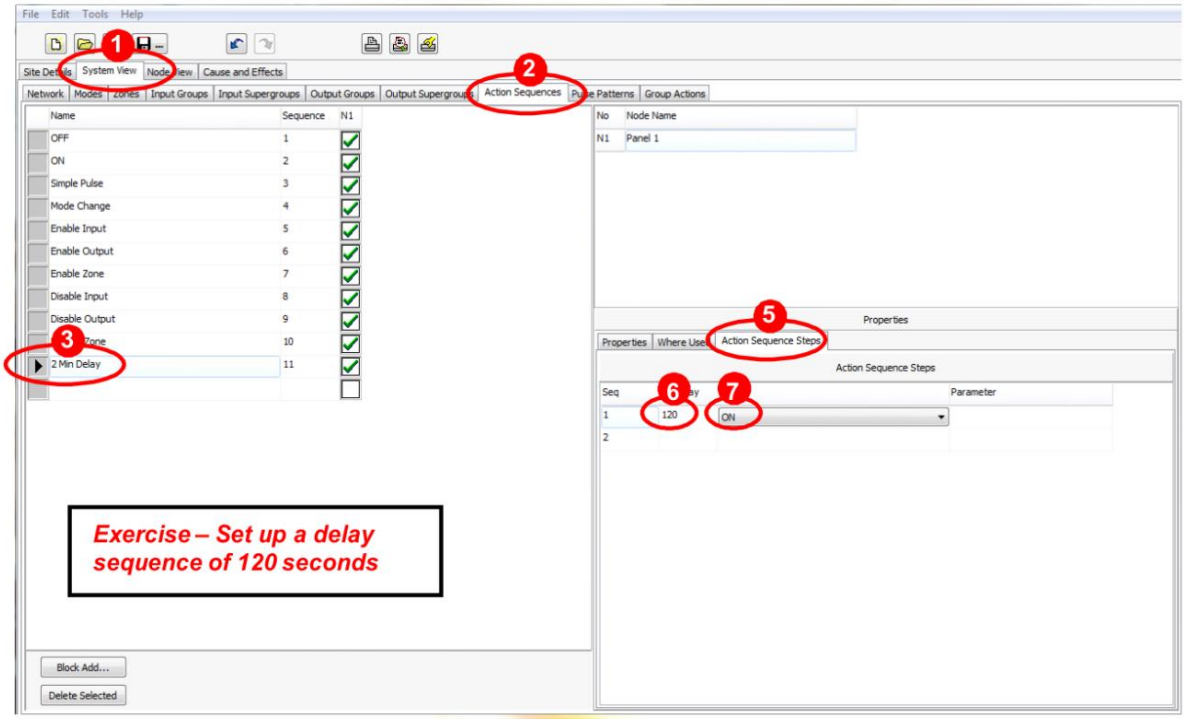
22.2 Adding & Naming Output Groups

- WORKED EXAMPLE: Add four new Output Groups: OG4 (ZONE 1), OG5 (ZONE 2), OG6 (ZONE 3) and OG7 (ZONE 4).



22.3 Adding & Naming a Delay Action Sequence

- WORKED EXAMPLE: Set up a delay sequence of 2 minutes, i.e. 120 seconds.

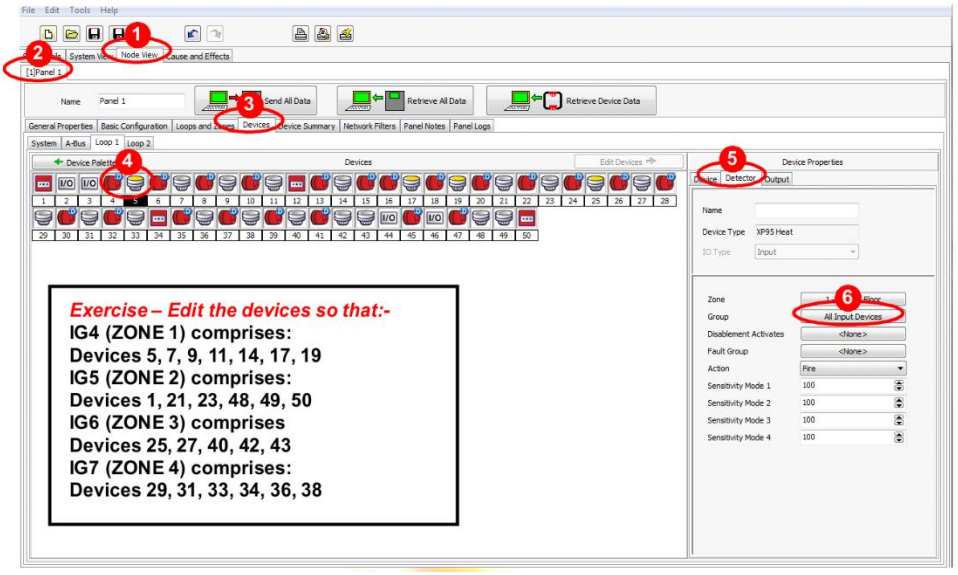


22.4 Editing a Device's Input Group

Note you can also allocate a device's Input Group using the Device Summary screen (refer to section 11).

- WORKED EXAMPLE: Edit the devices so that:

  IG4 (ZONE 1) comprises: Devices 5 (shown selected below), 7, 9, 11, 14, 17, 19.
  IG5 (ZONE 2) comprises: Devices 1, 21, 23, 48, 49, 50.
  IG6 (ZONE 3) comprises: Devices 25, 27, 40, 42, 43.
  IG7 (ZONE 4) comprises: Devices 29, 31, 33, 34, 36, 38.

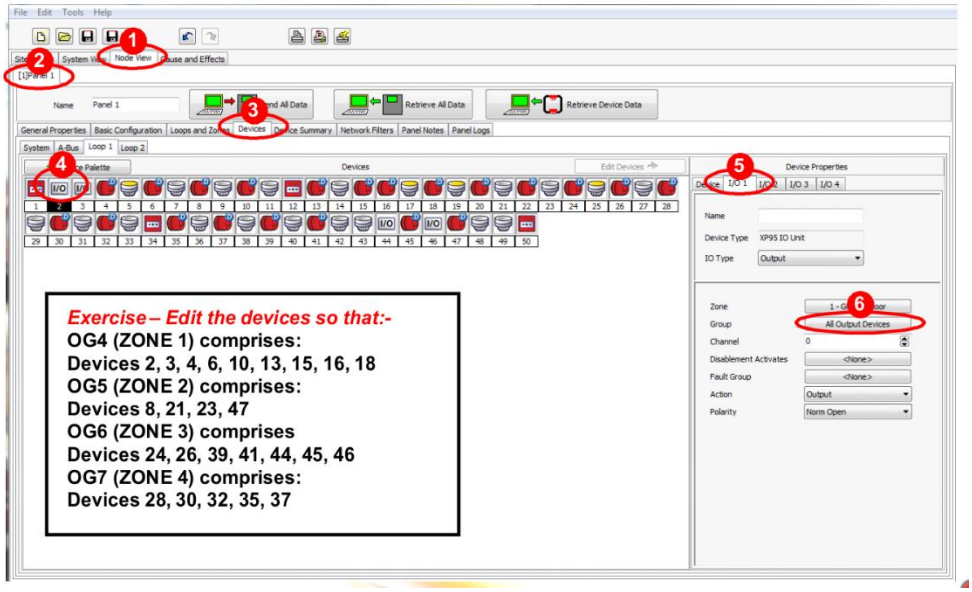


22.5 Editing a Device's Output Group

Note you can also allocate a device's Output Group using the Device Summary screen (refer to section 11).

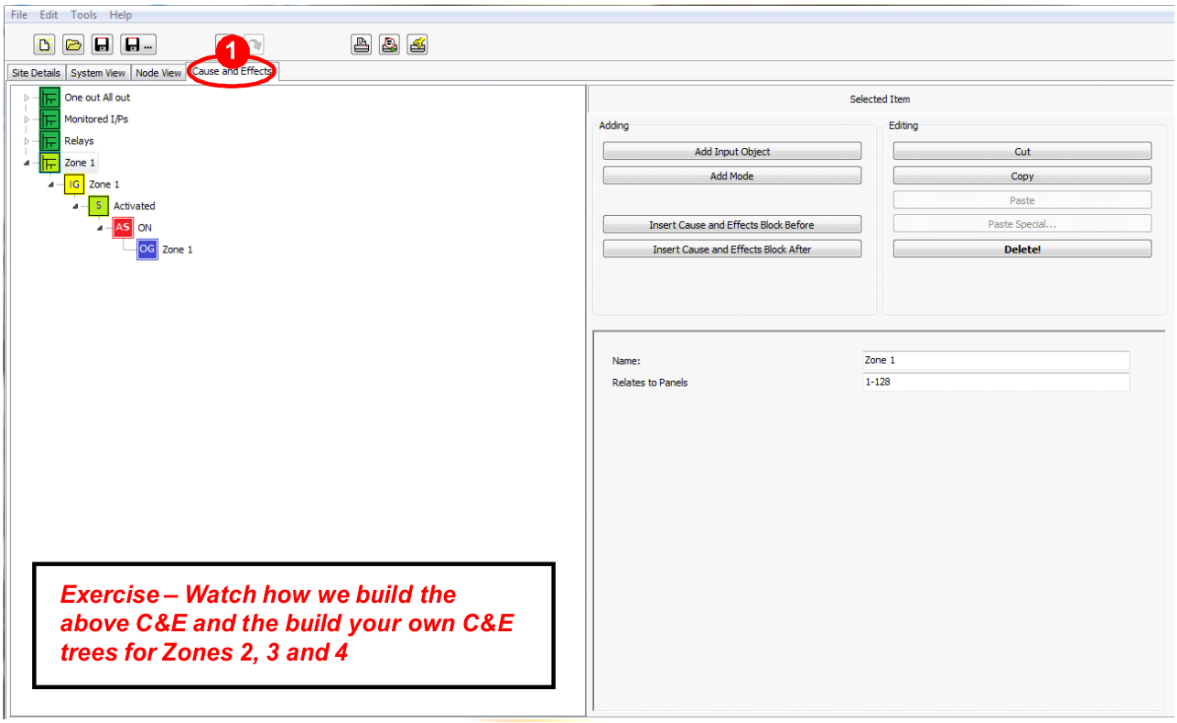
- WORKED EXAMPLE: Edit the devices so that:

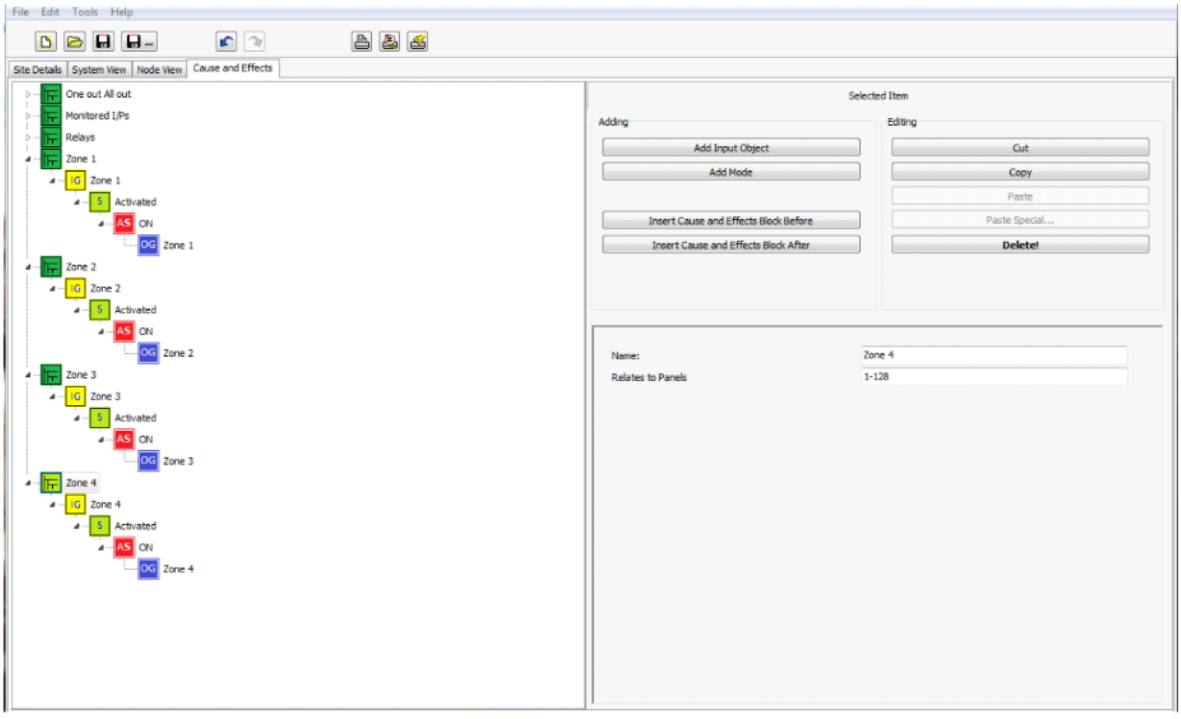
  OG4 (ZONE 1) comprises: Devices 2 (shown selected below), 3, 4, 6, 10, 13, 15, 16, 18.
  OG5 (ZONE 2) comprises: Devices 8, 21, 23, 47.
  OG6 (ZONE 3) comprises: Devices 24, 26, 39, 41, 44, 45, 46.
  OG7 (ZONE 4) comprises: Devices 28, 30, 32, 35, 37.



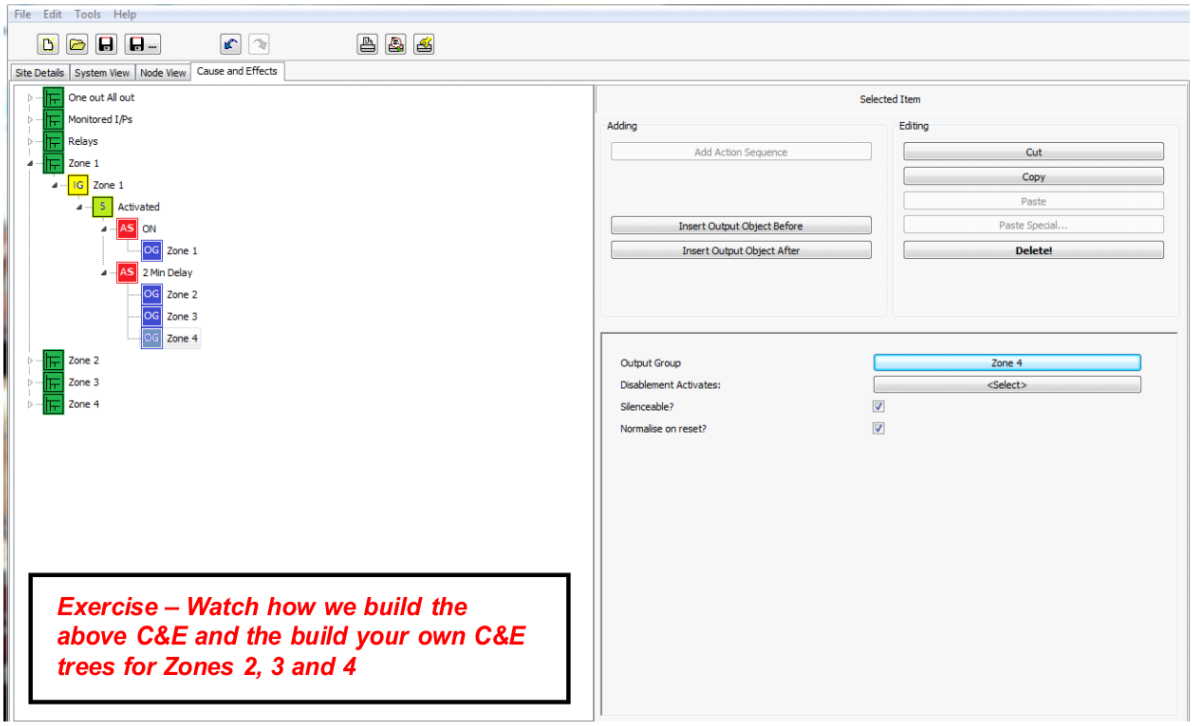
22.6 Adding a New C&E

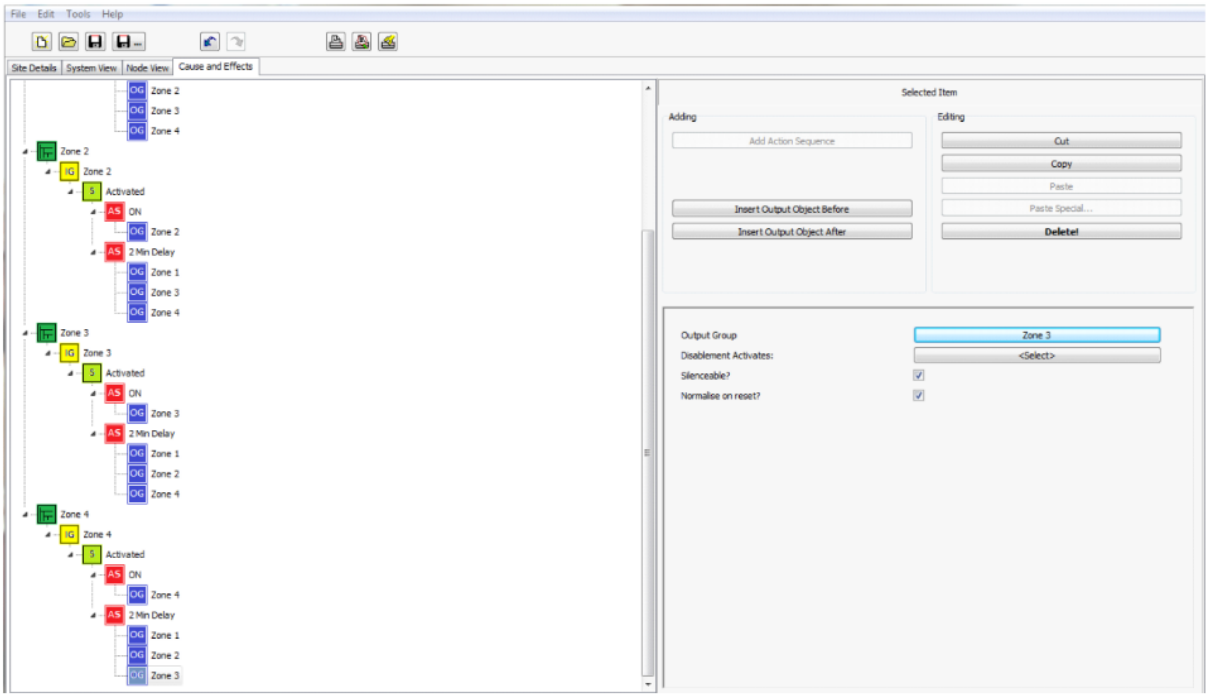
- *WORKED EXAMPLE: Watch how we build this C&E and build your own C&E trees for Zones 2, 3 and 4.*





- *WORKED EXAMPLE: Watch how we build this C&E, with a 2 minute delay, and build your own C&E trees for Zones 2, 3 and 4.*



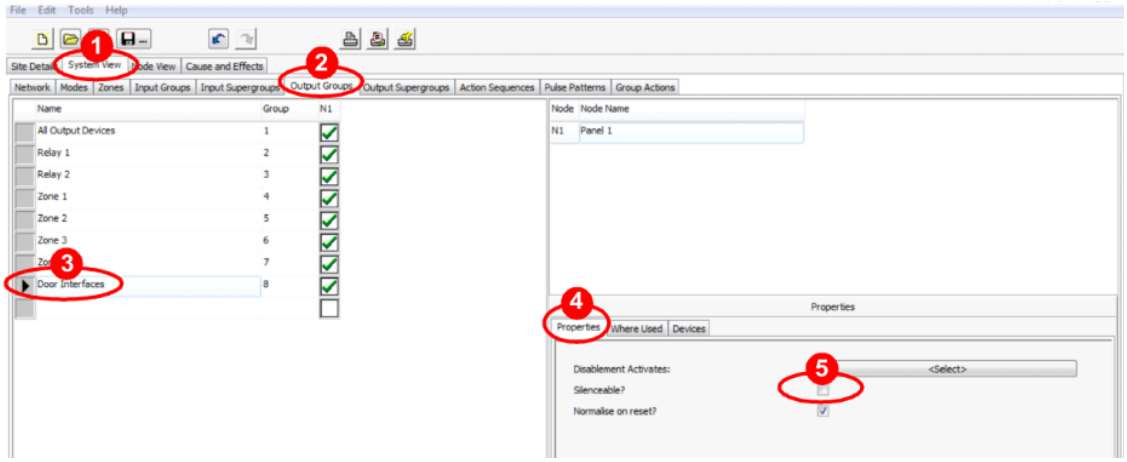


23 Requirement 2 – Worked Example

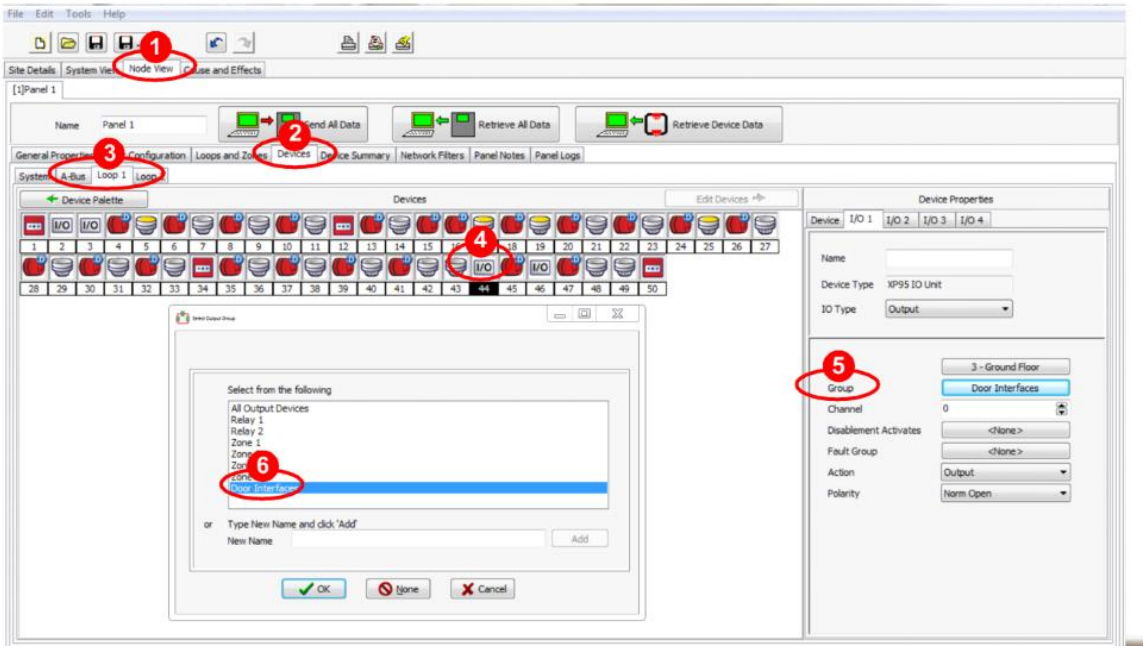
- The Fire Officer now wants the fire doors, located in Zone 3, to close when Zones 2, 3 or 4 are in alarm. If there is a fire in Zone 1 they should remain open.
- As such, devices 44 and 46 need to be programmed into their own Output Group and set up to activate when any device in Zones 2, 3 or 4 is in alarm.
- Re-program the system and setup the C&Es for this scenario.

23.1 Building the C&E Tree

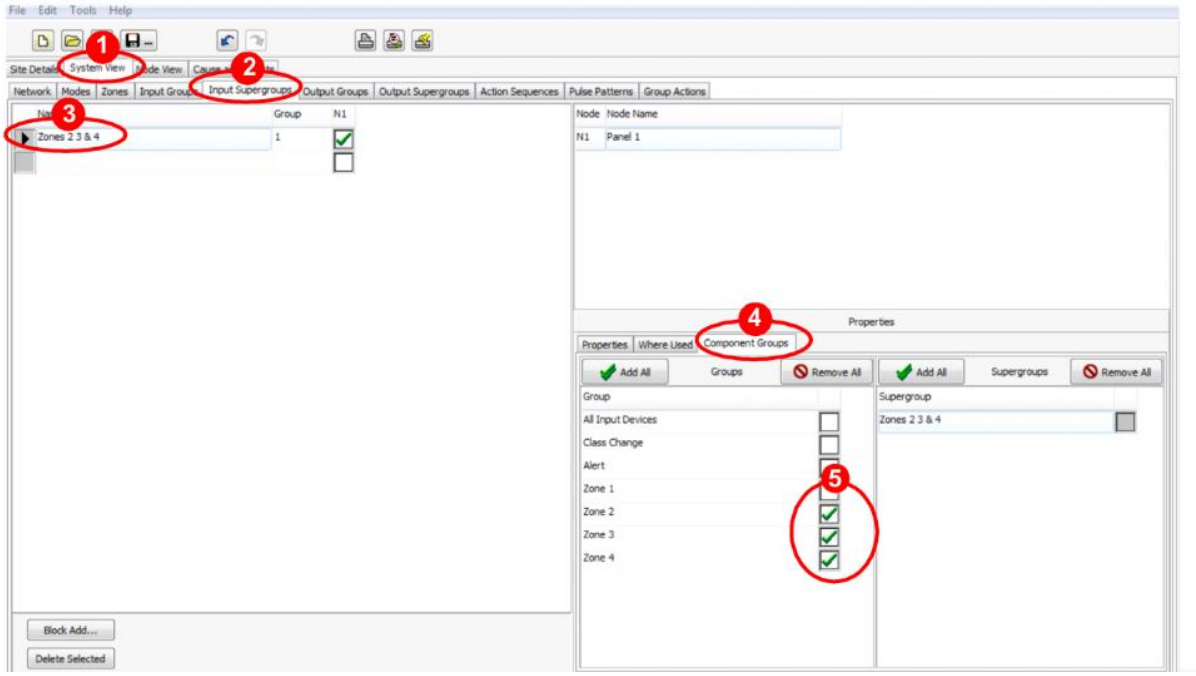
- *WORKED EXAMPLE: Create a new Output Group for the fire door I/O's named 'Door Interfaces'.*



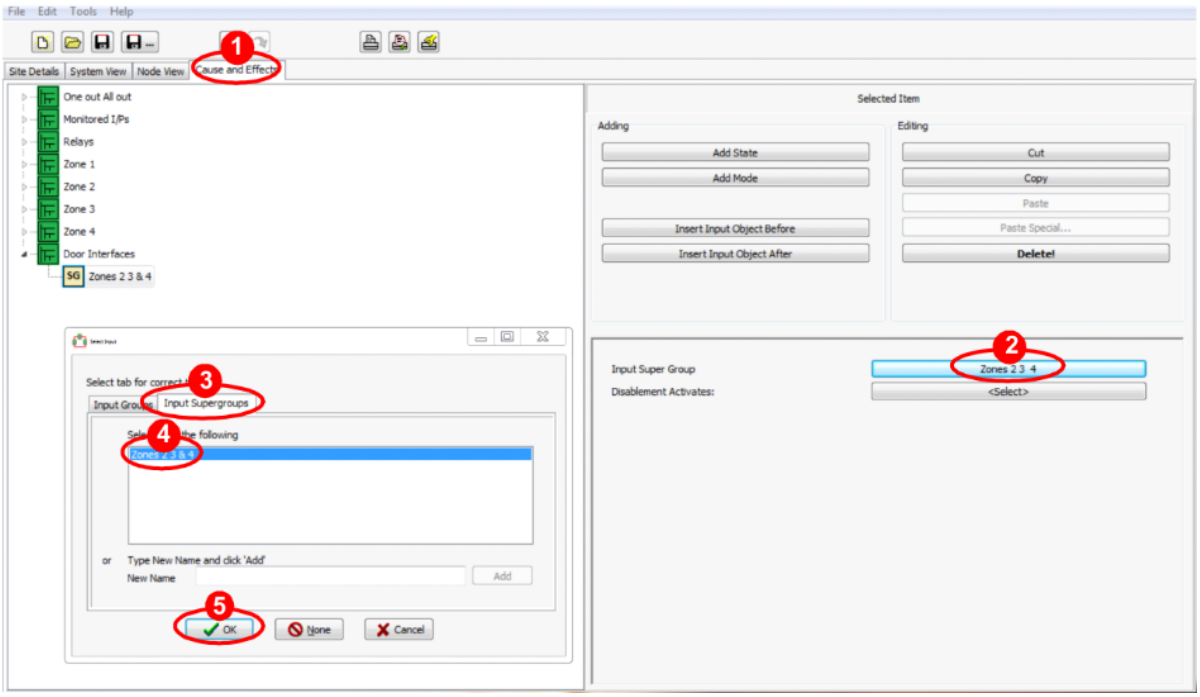
- *WORKED EXAMPLE: Add the door interfaces I/O's to the new Output Group.*



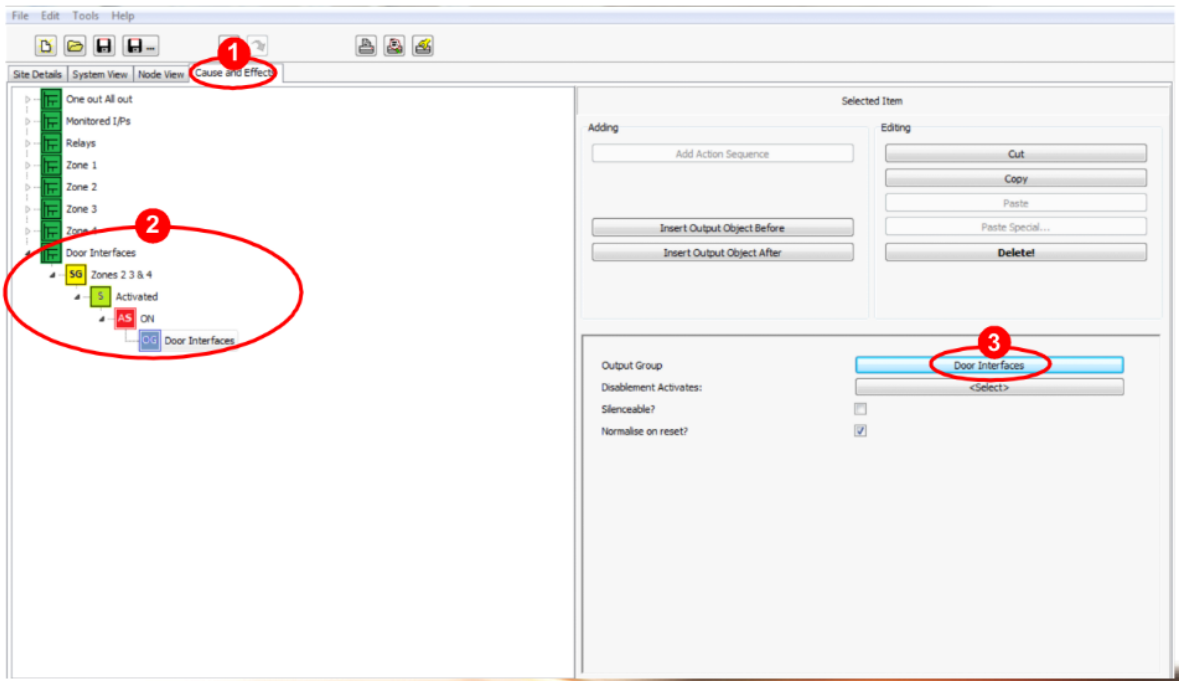
- *WORKED EXAMPLE: Create an Input Supergroup for Zones 2, 3 and 4.*



- *WORKED EXAMPLE: Create the C&E tree for the fire door scenario (Part 1).*



➢ *WORKED EXAMPLE: Create the C&E tree for the fire door scenario (Part 2).*

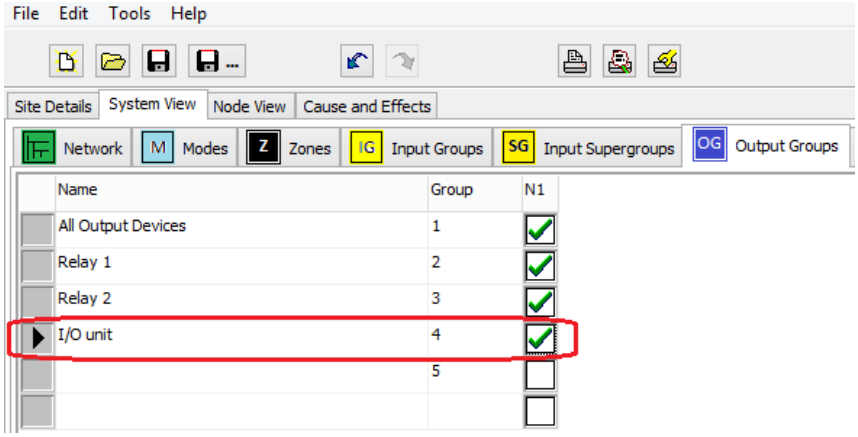


24 Additional ZFP Cause and Effects

C&E 1 - Two Device Activation with an I/O Unit on 1st Stage Activation

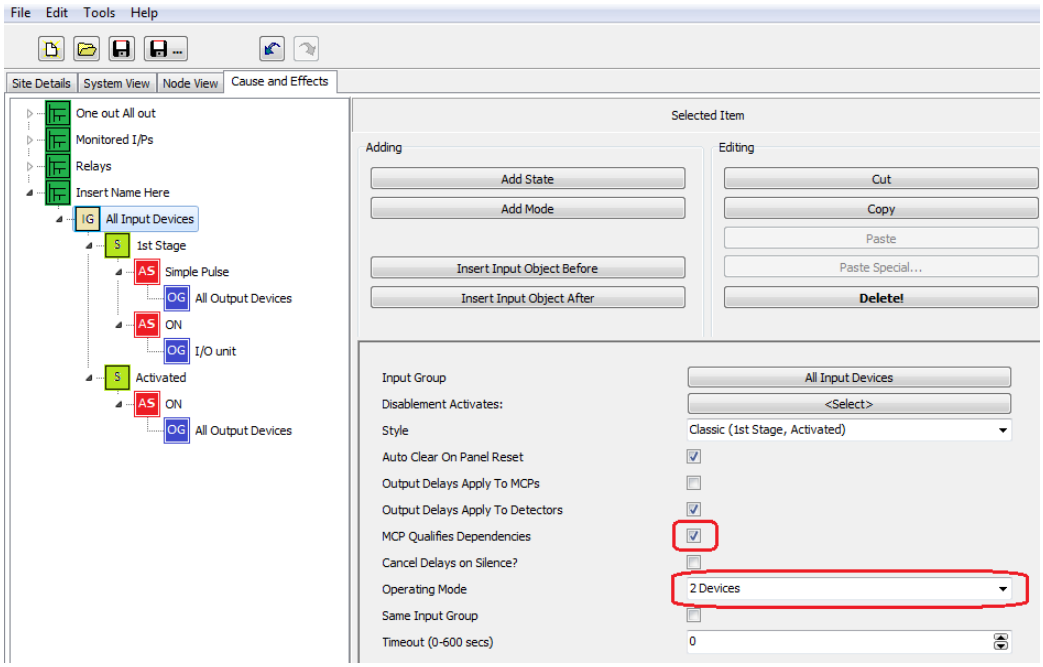
- On 1st stage activation of a detector all sounders shall pulse. A second detector activation shall cause a full evacuation.
- An MCP shall cause a full evacuation.
- In addition, on 1st stage activation an I/O unit shall be triggered.

Create a new 'I/O unit' Output Group.



Create a new C&E Block for '1st Stage' and 'Activated' States.

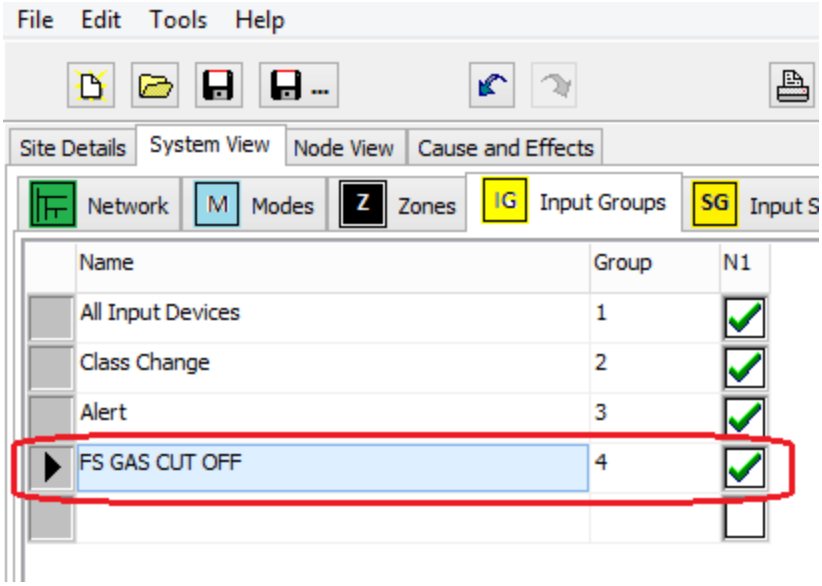
In the Properties Pane, ensure 'MCP Qualifies Dependencies' is ticked and change 'Operating Mode' to 2 Devices.



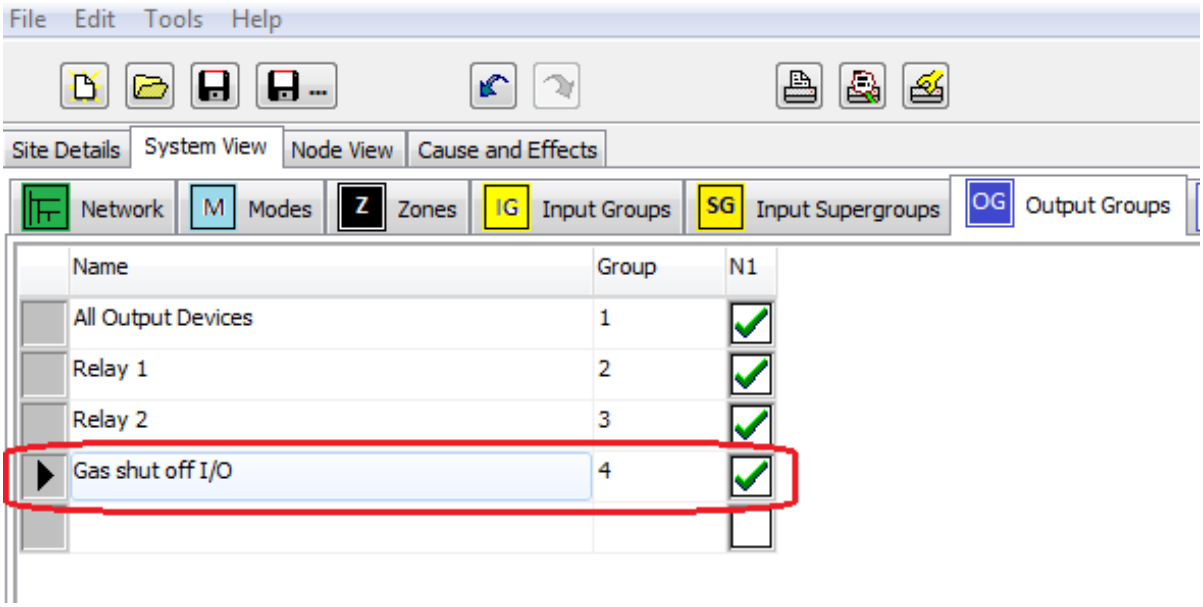
C&E 2 - Disabling an I/O Unit using a Panel Function Switch

- During a weekly test it is required that an I/O unit in control on an interface, connected to a Gas Cut Off, etc., be disabled by using a panel mounted function switch, thereby avoiding an accidental activation.

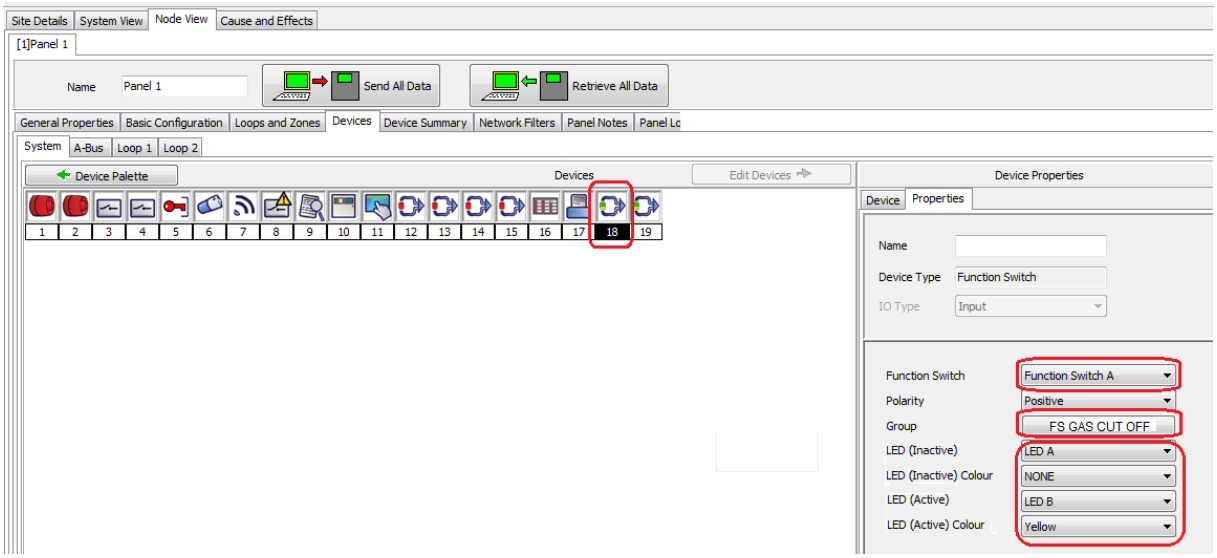
Create a new 'FS GAS CUT OFF' Input Group for the function switch.



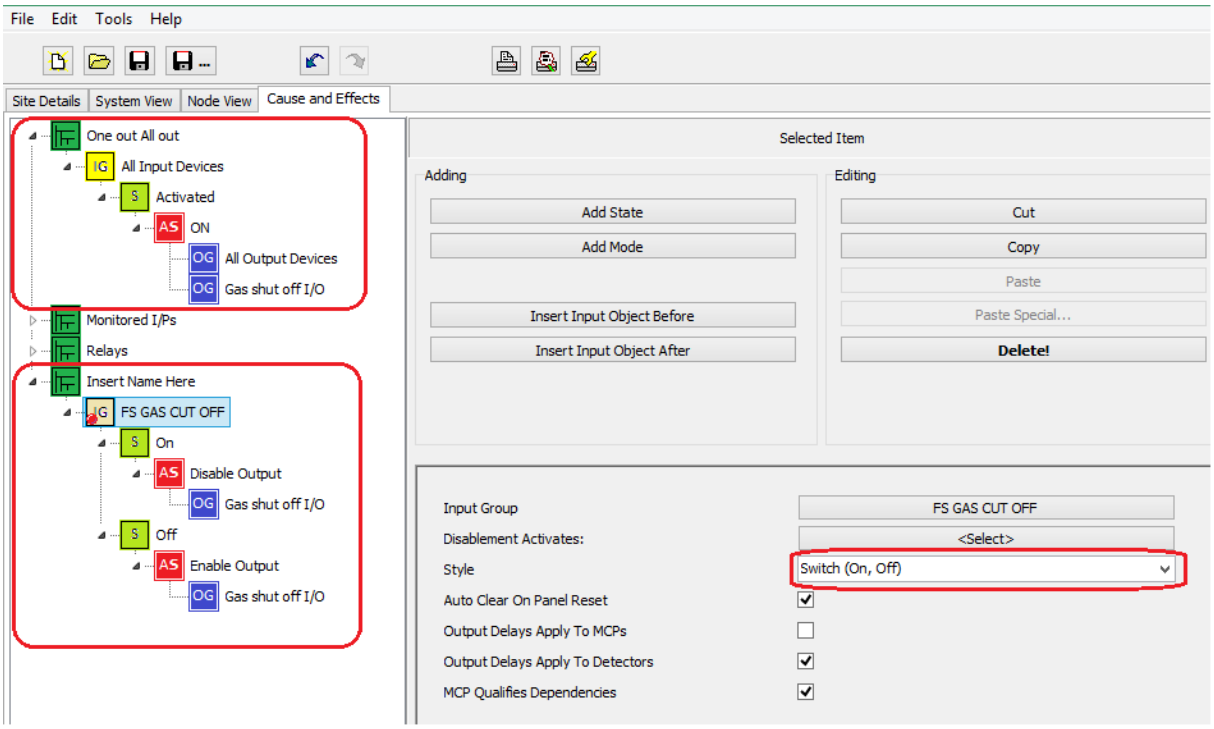
Create a new 'Gas shut off I/O' Output Group for the I/O unit.



In System Devices, click the 'Function Switch' device (address 18 shown below).
In the Device Properties Pane, ensure Function Switch A is selected, then assign the switch to the 'FS GAS CUT OFF' Input Group. Change the switch's LED settings as shown. Note the Inactive LED A does not illuminate and the Active LED B is Yellow.



Using the existing 'One out All out' C&E Block, add the 'Gas shut off I/O' Output Group.
Create a new C&E Block for the function switch. For the 'FS GAS CUT OFF' Input Group, change the 'Style' to Switch (On, Off) and add 'On' and 'Off' States.

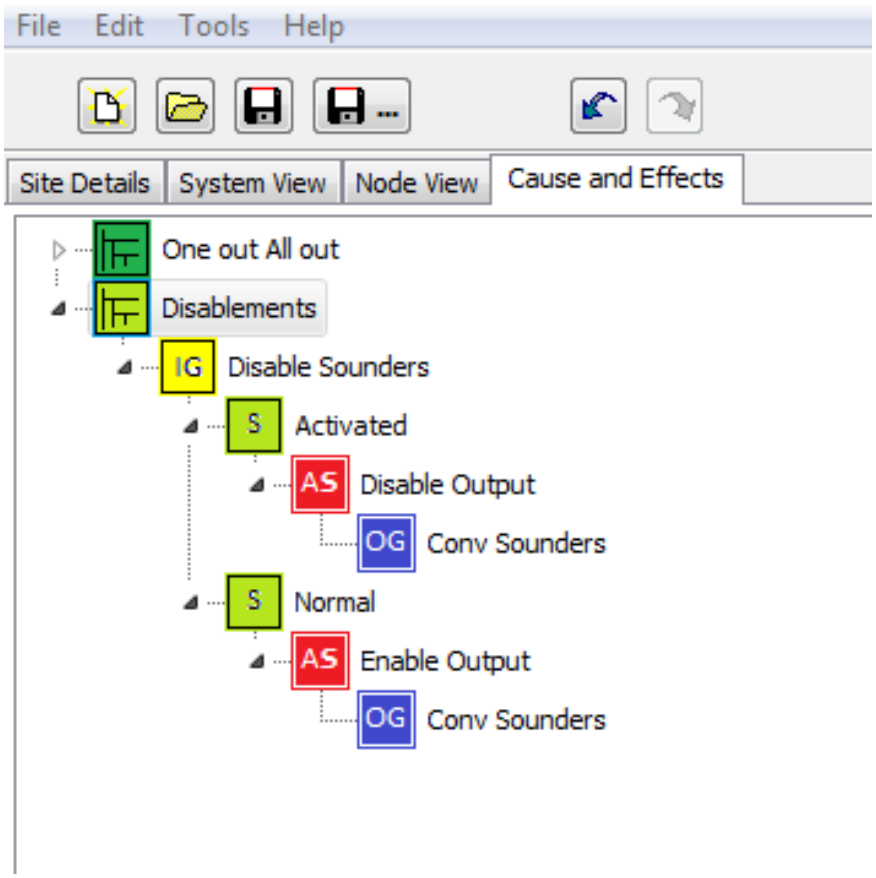


C&E 3 - Disabling a Group of Sounders using a Panel Function Switch

- In the same way the I/O unit was previously disabled in C&E 2, a group of conventional sounders shall be disabled using a panel mounted function switch.

Create a new 'Disable Sounders' Input Group for the function switch.
Create a new 'Conv Sounders' Output Group for the sounders.
In System Devices, assign the switch (Function Switch A) to the 'Disable Sounders' Input Group and change the switch's LED settings as shown previously in C&E 2.

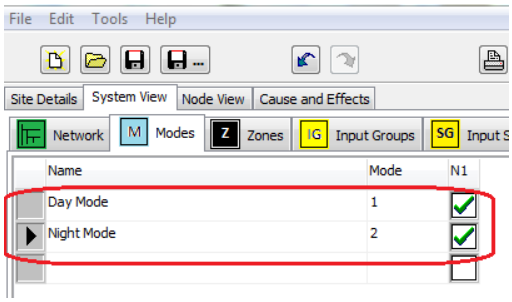
Create a new 'Disablements' C&E Block for the function switch.
For the 'Disable Sounders' Input Group, leave the 'Style' as Classic (1st Stage, Activated) and add 'Activated' and 'Normal' States.



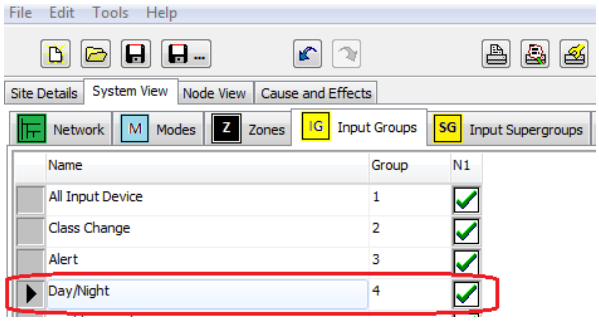
C&E 4 - Multi-Sensor Sensitivity Mode Change with Event Timer

- In this situation it is necessary for the Multi-Sensors to be in Heat Only operating mode during the day, and combined Smoke and Heat operating mode during the night. An Event Timer shall be used to switch the mode of the Multi-Sensors between the hours of 7am-7pm.

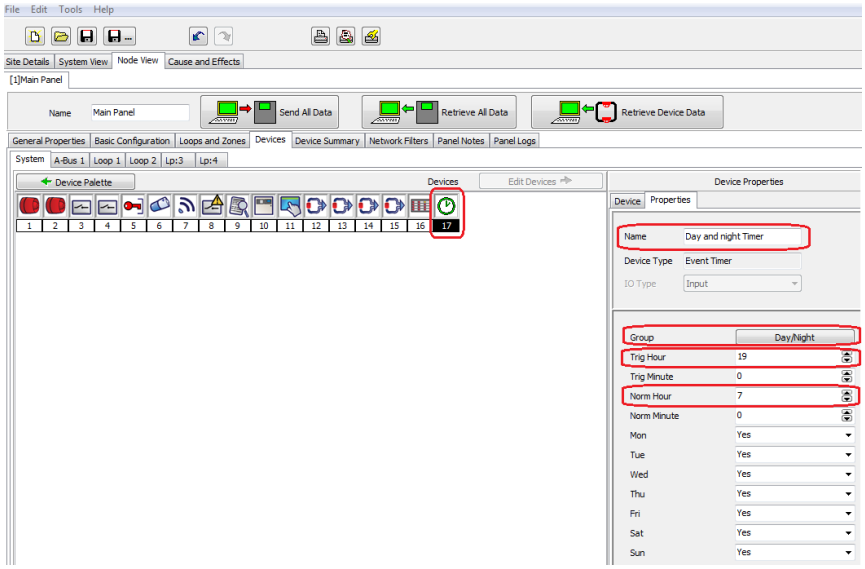
Create two new operational Modes ('Day Mode' and 'Night Mode').



Create a new 'Day/Night' Input Group.

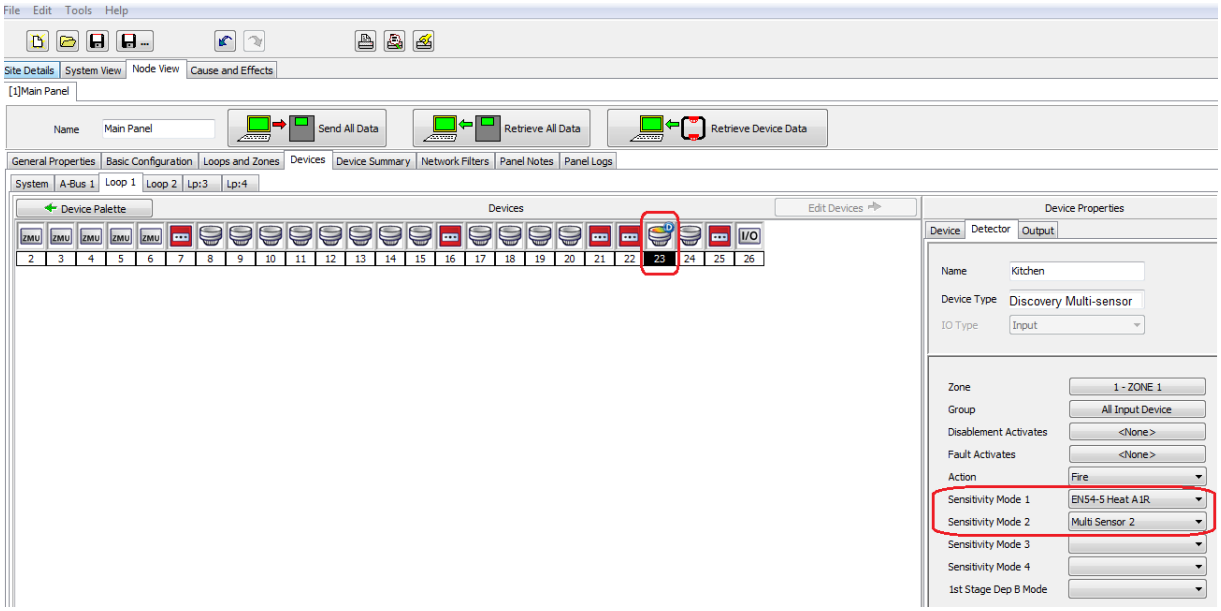


In System Devices, create a new 'Event Timer' device (address 17 shown below).
In the Device Properties Pane, name the timer ('Day and Night Timer') and assign the timer to the 'Day/Night' Input Group. Change 'Trig Hour' to 19, i.e. 7pm and 'Norm Hour' to 7, i.e. 7am.



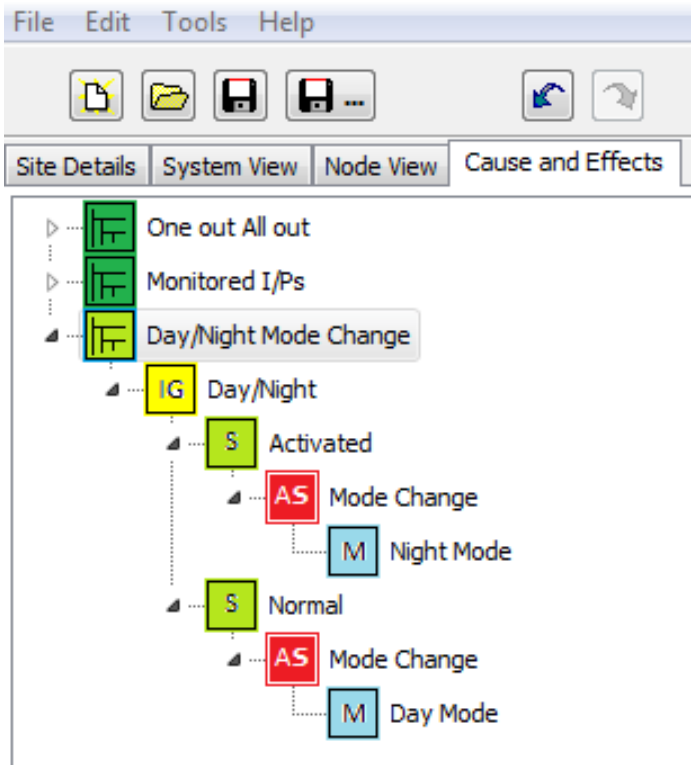
In Loop Devices, click a 'Multi-Sensor' device (address 23 shown below).

In the Device Properties Pane, change 'Sensitivity Mode 1' to EN54-5 Heat A1R and change 'Sensitivity Mode 2' to Multi Sensor 2. Repeat these sensitivity mode changes for all relevant multi-sensors.



Create a new 'Day/Night Mode Change' C&E Block.

For the 'Day/Night' Input Group, add 'Activated' and 'Normal' States with 'Day' and 'Night' mode changes.

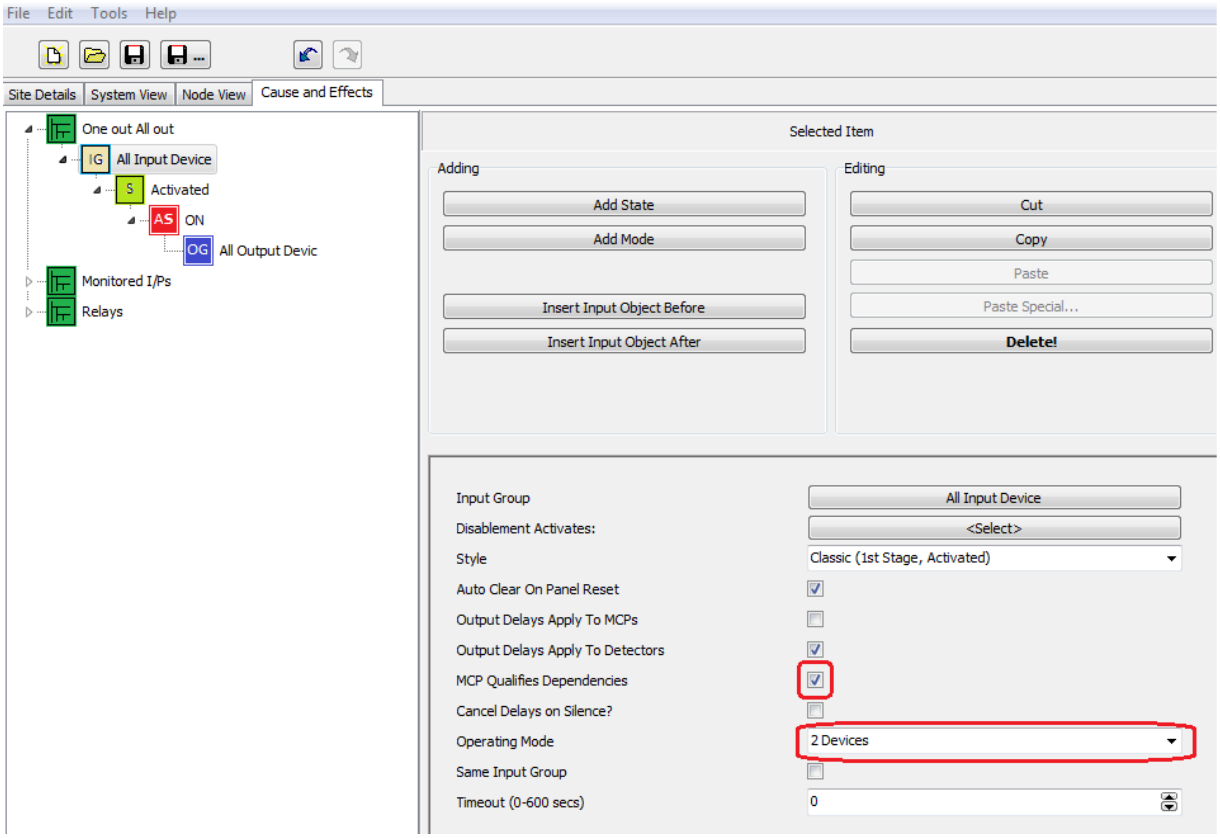


C&E 5 - Two Device Activation System

- A full evacuation shall be triggered after two detectors activate.
- An MCP shall cause a full evacuation.

Modify the existing 'One out All out' C&E Block.

In the Properties Pane, ensure 'MCP Qualifies Dependencies' is ticked and change 'Operating Mode' to 2 Devices.

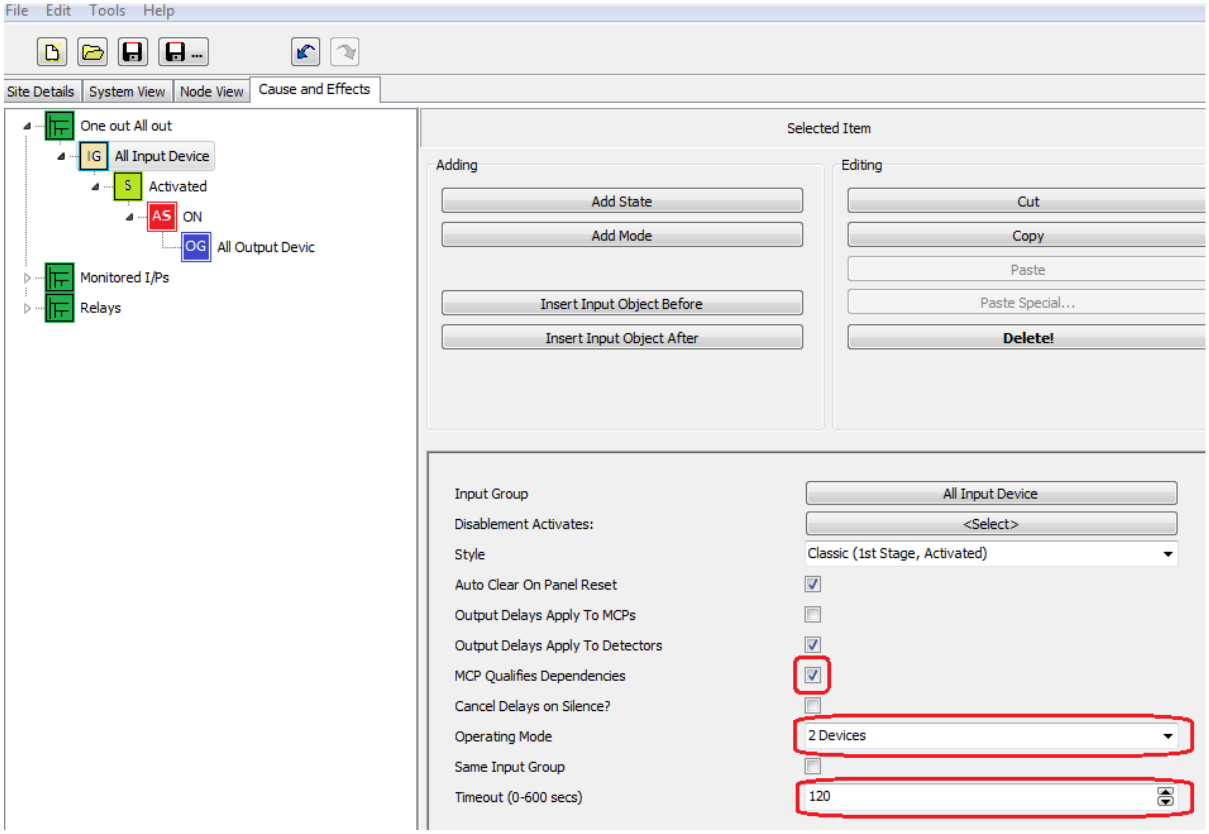


C&E 6 - Two Device Activation with a Two Minute Delay

- A full evacuation shall be triggered for any of the following conditions:
  - A single detector activation and the expiry of a two minute delay,
  - Two detector activation,
  - Activation of any MCP.

Modify the existing 'One out All out' C&E Block.

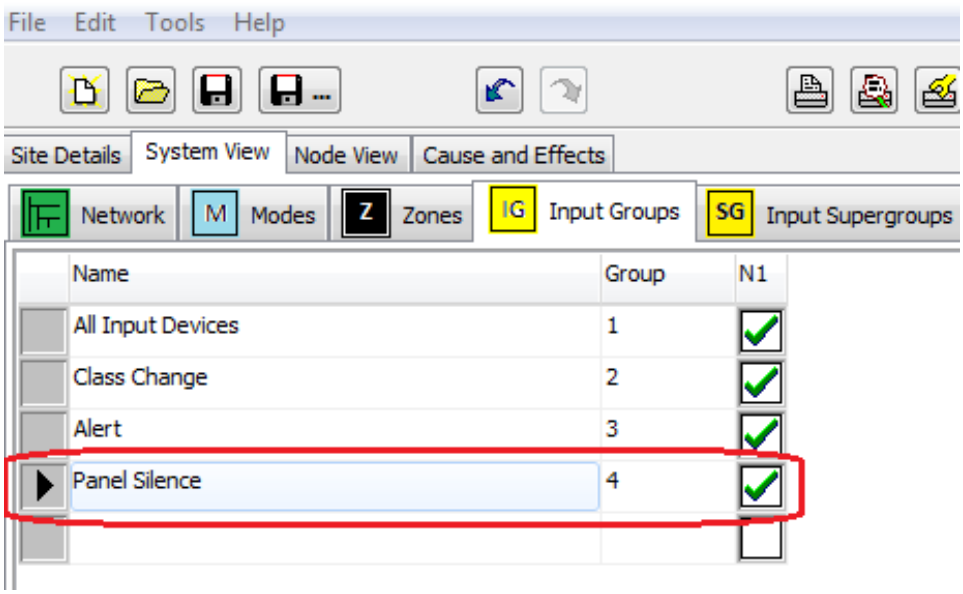
In the Properties Pane, ensure 'MCP Qualifies Dependencies' is ticked, change 'Operating Mode' to 2 Devices and change 'Timeout' to 120 secs, i.e. 2 mins.



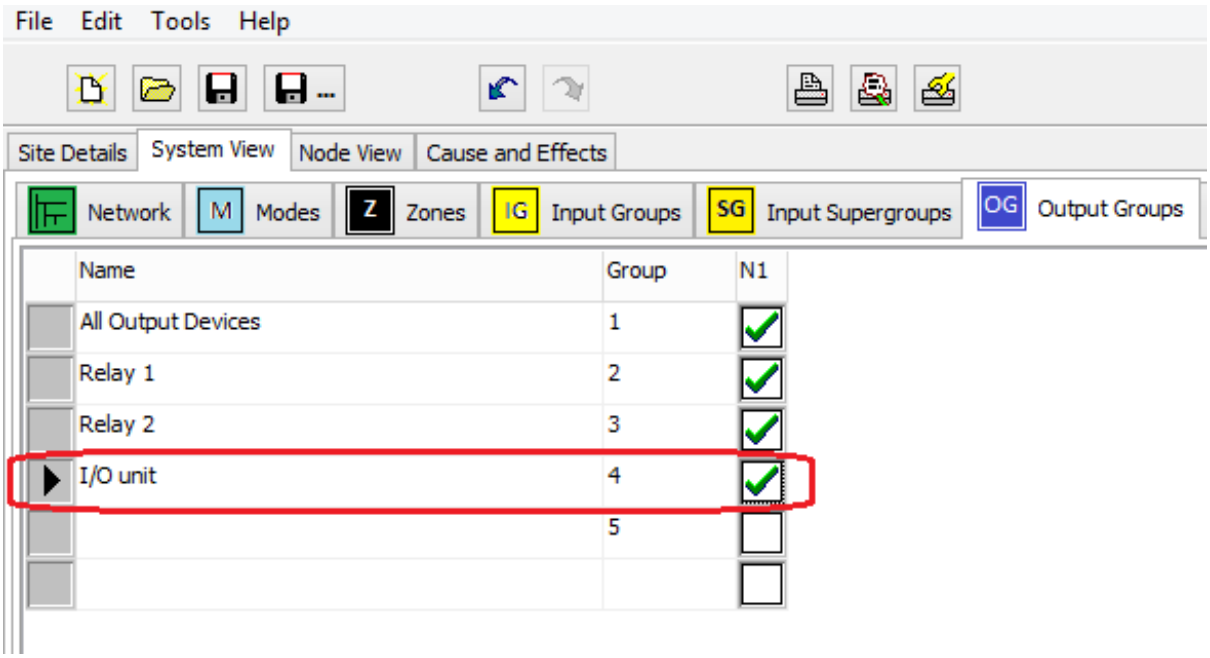
C&E 7 - Triggering an I/O Unit on a CIE Silence and Normalise on Reset

- This system is to operate as a One Out, All Out System, however, when the fire alarm condition is silenced an I/O unit shall be triggered. This I/O unit shall be Normalised on Reset.

Create a new 'Panel Silence' Input Group.

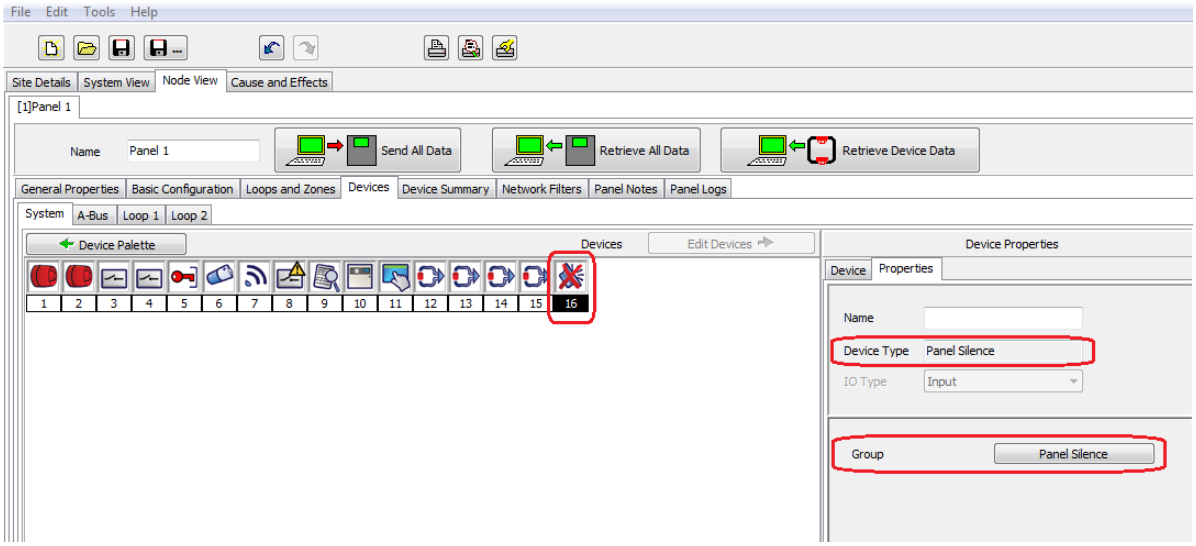


Create a new 'I/O unit' Output Group.



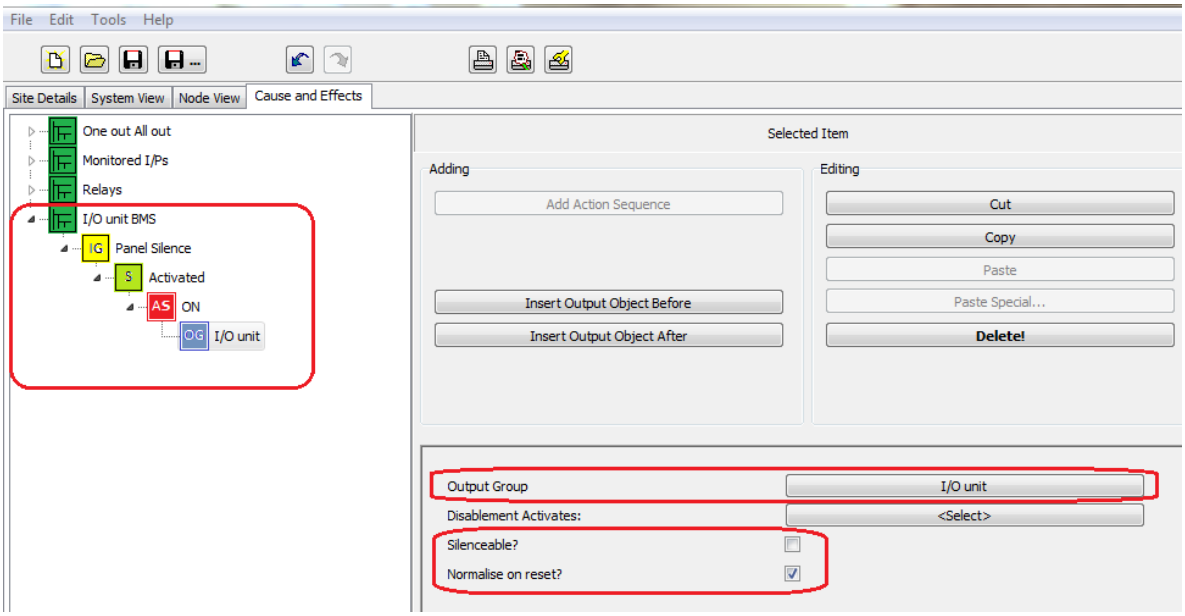
In System Devices, create a new 'Panel Silence' device (address 16 shown below).

In the Device Properties Pane, name the device (Panel Silence) and assign the device to the 'Panel Silence' Input Group.



Create a new 'I/O unit BMS' C&E Block.

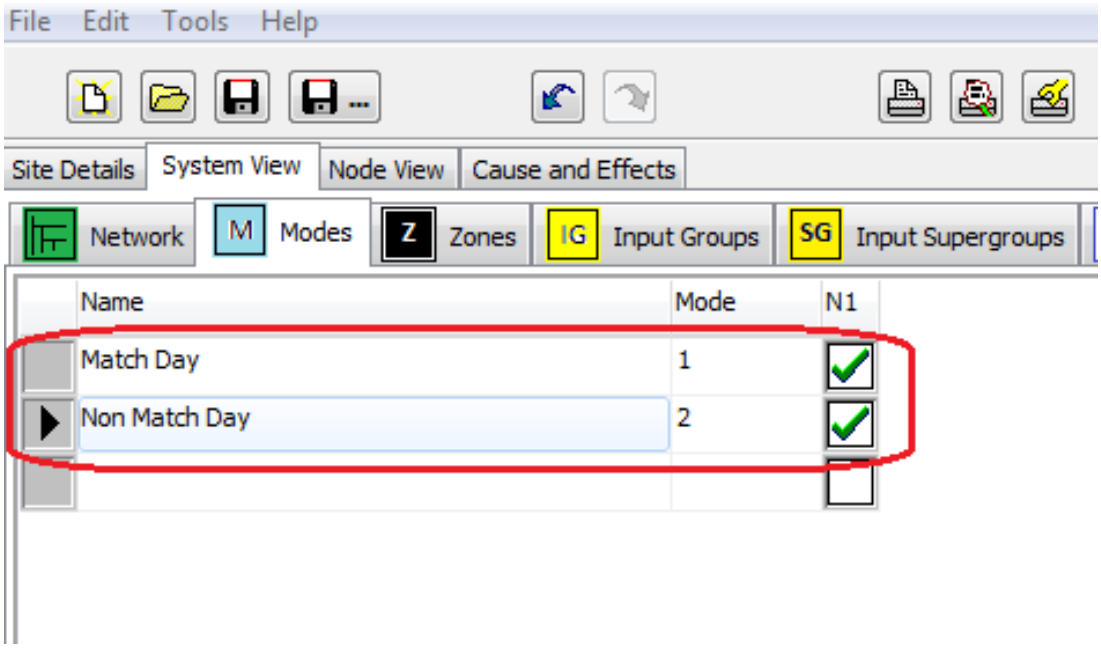
For the 'I/O unit' Output Group, change 'Silenceable' to un-ticked, as the Output Group is activated after a panel silence. Ensure 'Normalise on reset?' is ticked.



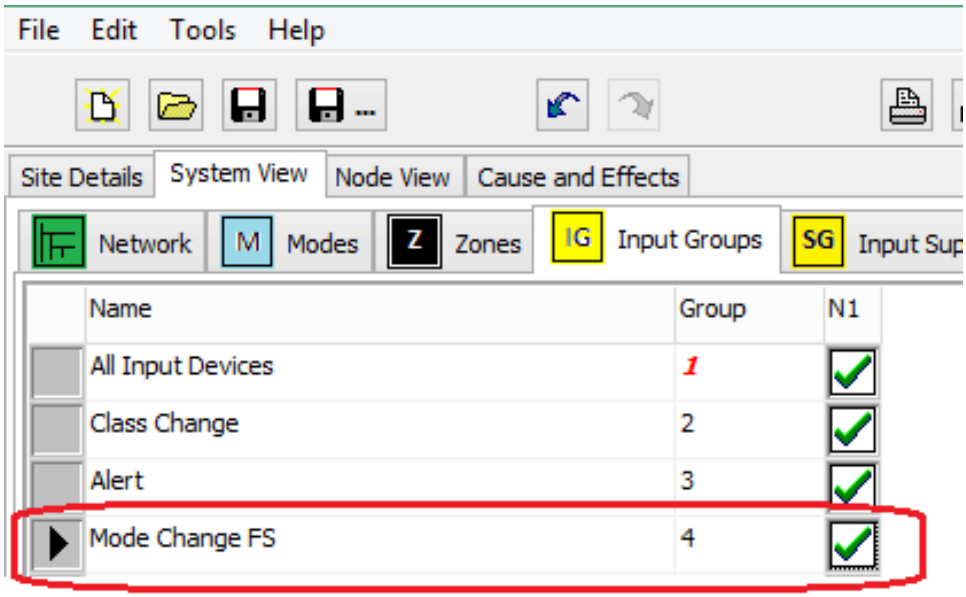
C&E 8 - Changing the Operational Mode of the CIE using a Function Switch

- It may be required for the CIE to operate completely differently during different periods, such as a Football Stadium Match Day or Non-Match Day situations. As a result it shall be necessary to change the operational mode of the CIE by using a panel mounted function switch.

Create two new Modes ('Match Day' and 'Non Match Day').

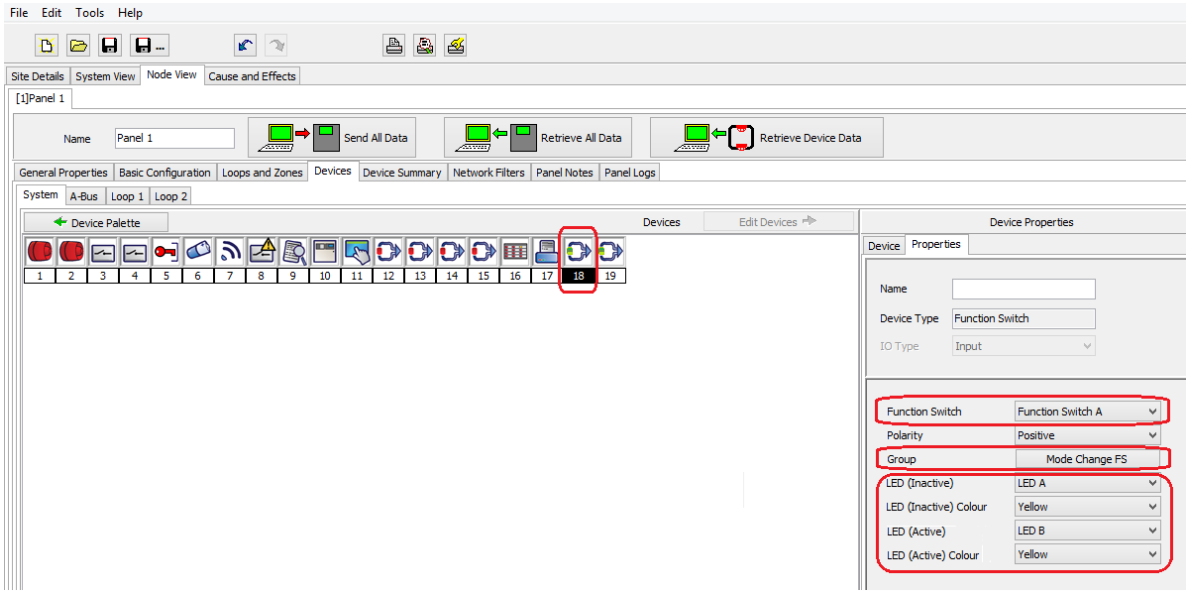


Create a new 'Mode Change FS' Input Group for the function switch.

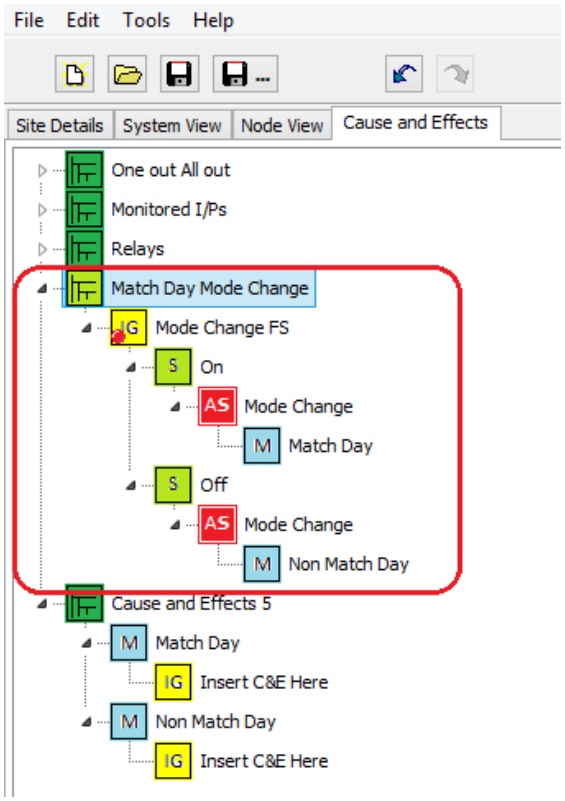


In System Devices, click the 'Function Switch' device (address 18 shown below).

In the Device Properties Pane, ensure Function Switch A is selected, then assign the switch to the 'Mode Change FS' Input Group. Change the switch's LED settings as shown. Note both the Inactive LED A and Active LED B are Yellow.



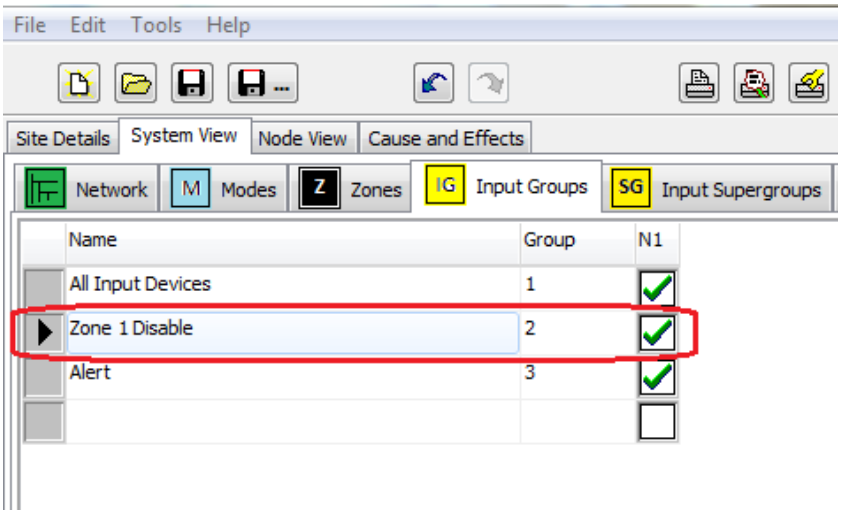
Create a new 'Match Day Mode Change' C&E Block for the function switch. Add the 'Mode Change FS' Input Group, change the 'Style' to Switch (On, Off) and add 'On' and 'Off' States for 'Match Day' and 'Non Match Day' modes.



C&E 9 - Using Third Party Devices with CIE Monitored Inputs

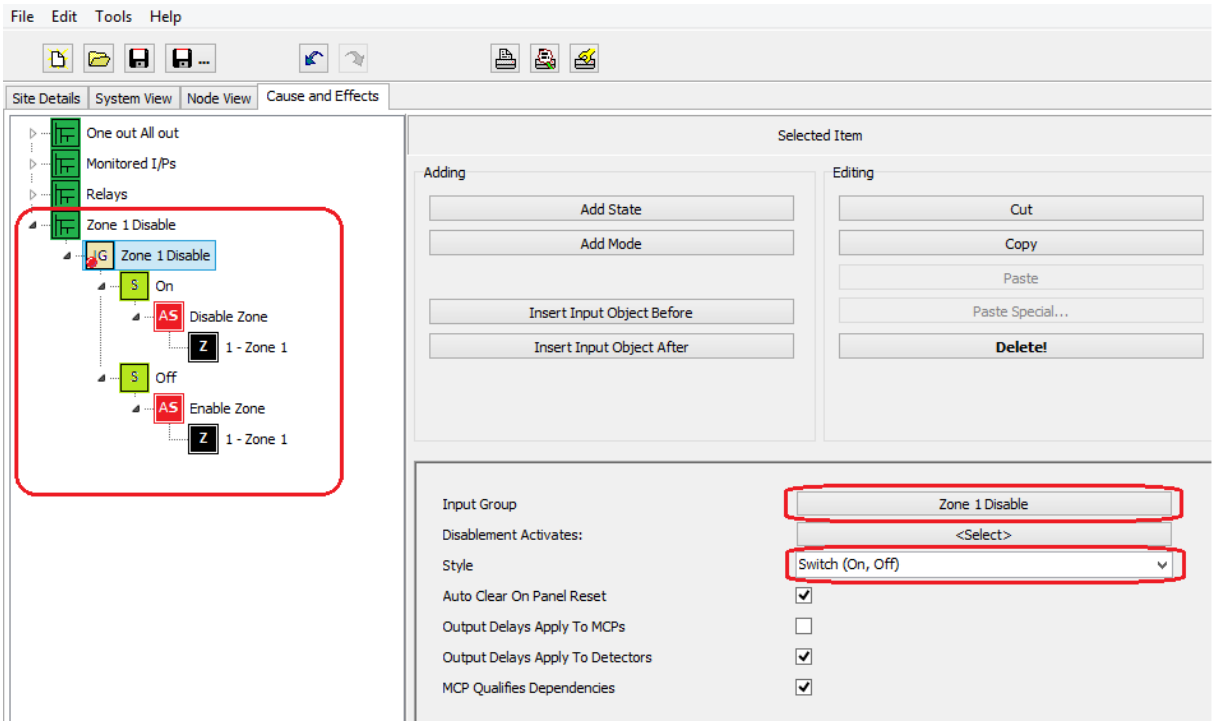
- Should no function switches be fitted at the CIE as standard, it is possible for third party devices to serve this purpose. In this case to disable a zone.

Modify the name of the existing 'Class Change' Input Group to 'Zone 1 Disable' Input Group. Note, this input is monitored by the panel.



Create a new 'Zone 1 Disable' C&E Block.

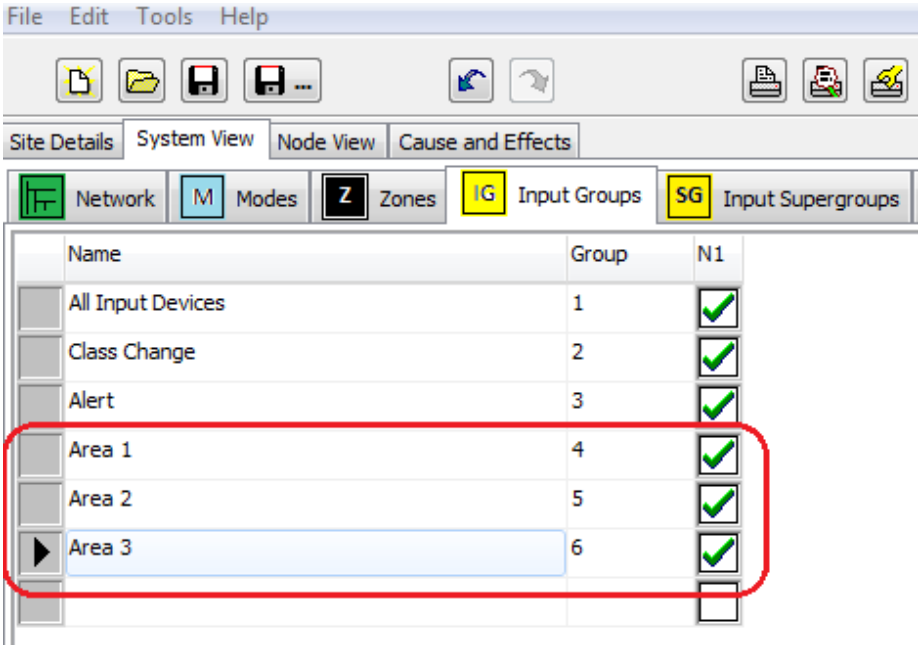
Add 'Zone 1 Disable' Input Group, change the input group 'Style' to Switch (On, Off) and add 'On' and 'Off' States for enabling and disabling a zone (Zone 1).



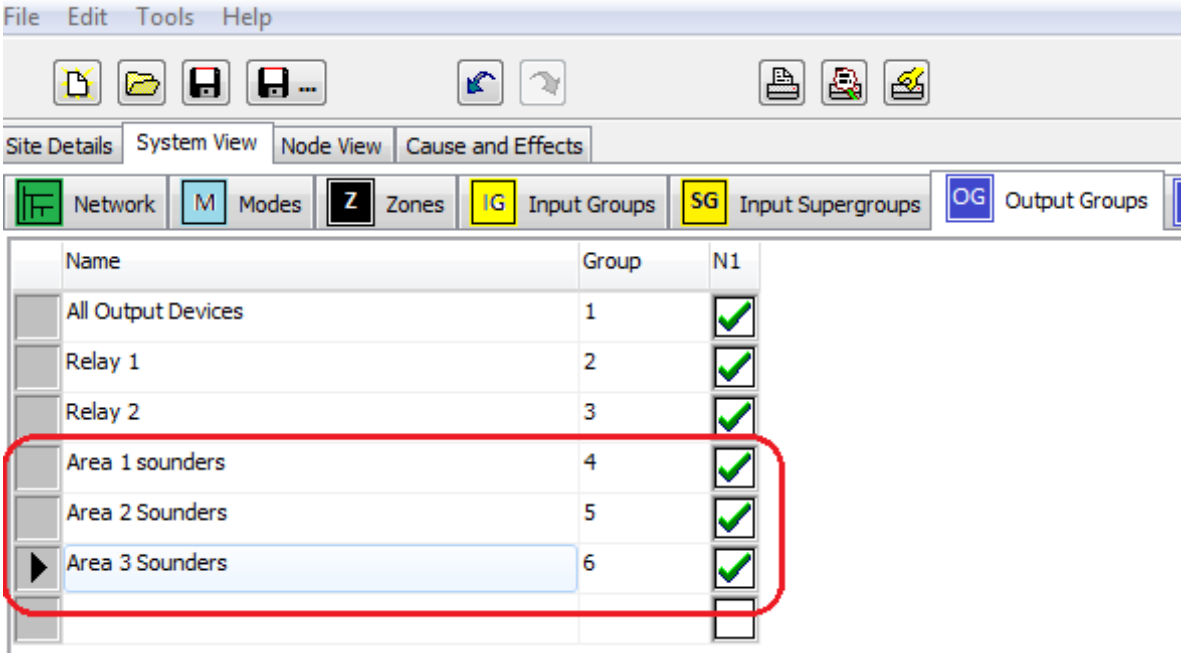
C&E 10 - Three Areas in One Out, All Out with Full Evacuation Delay

- Three Areas are to operate singularly as a One Out, All Out System. In addition, when one Area goes into full evacuation the other two Areas should go into full evacuation after a period of three minutes, if no Silence has occurred.

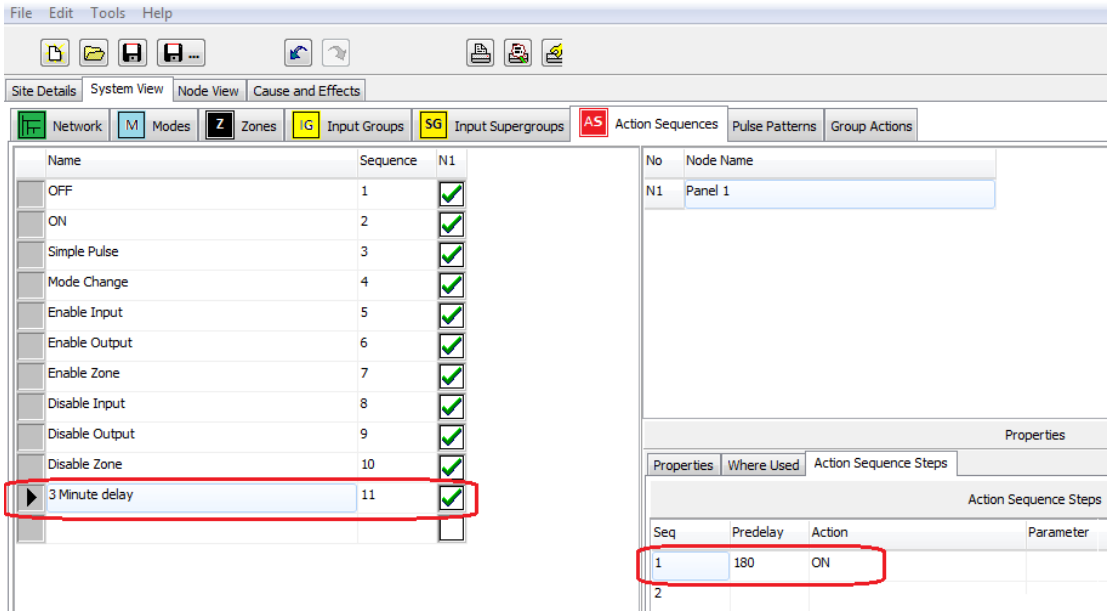
Create three new Input Groups (Area 1, Area 2 & Area 3).



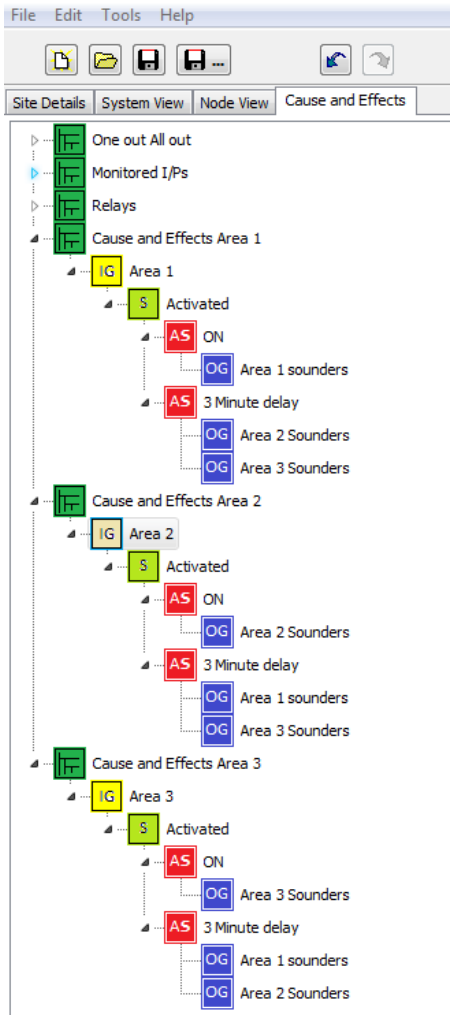
Create three new Output Groups (Area 1 sounders, Area 2 sounders & Area 3 sounders).



Create a new Action Sequence with a 3 minute (180 secs) delay.



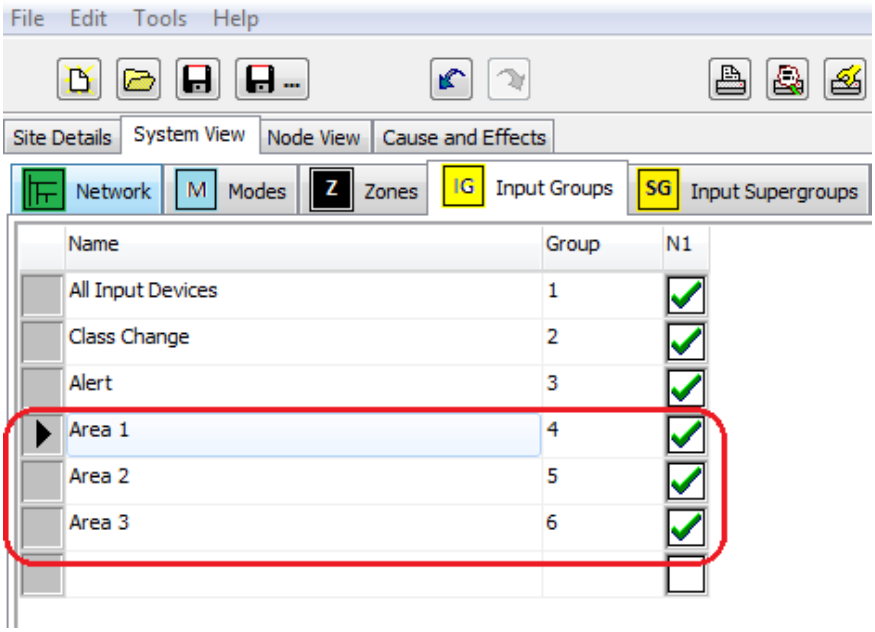
Create three new C&E Blocks with both immediate and delayed evacuation for the three Areas.



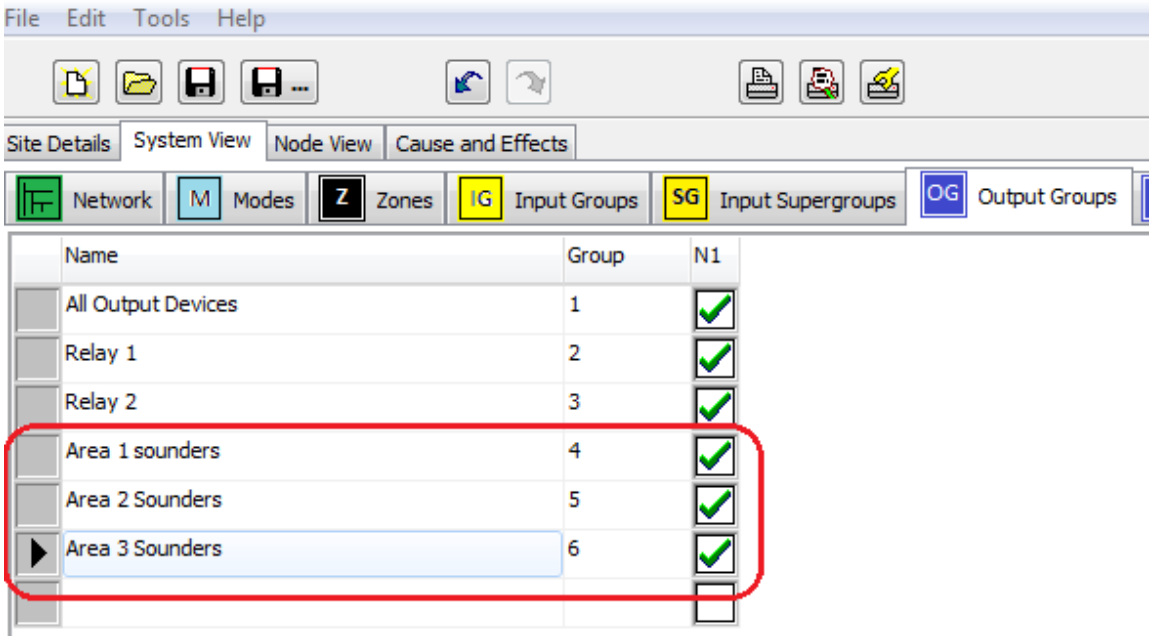
C&E 11 - Three Areas in One Out, All Out with Full Evacuation Delay and Pulse

- Three Areas are to operate singularly as a One Out, All Out System. In addition, when one Area goes into full evacuation the other two Areas should pulse sounders for three minutes before going into full evacuation, if no Silence has occurred.

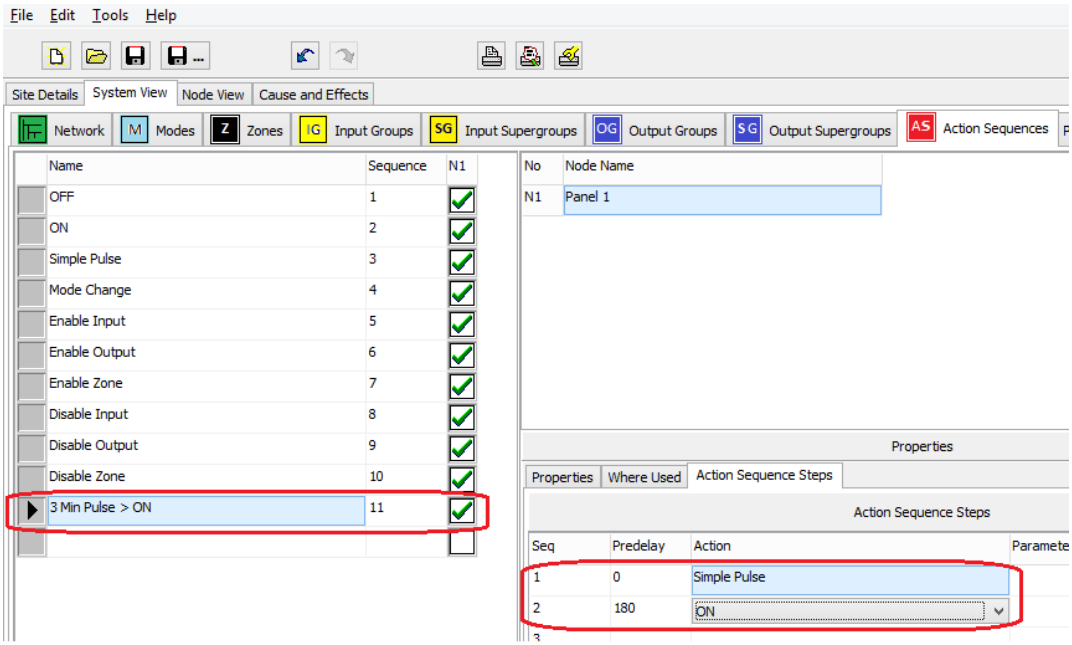
Create three new Input Groups (Area 1, Area 2 & Area 3).



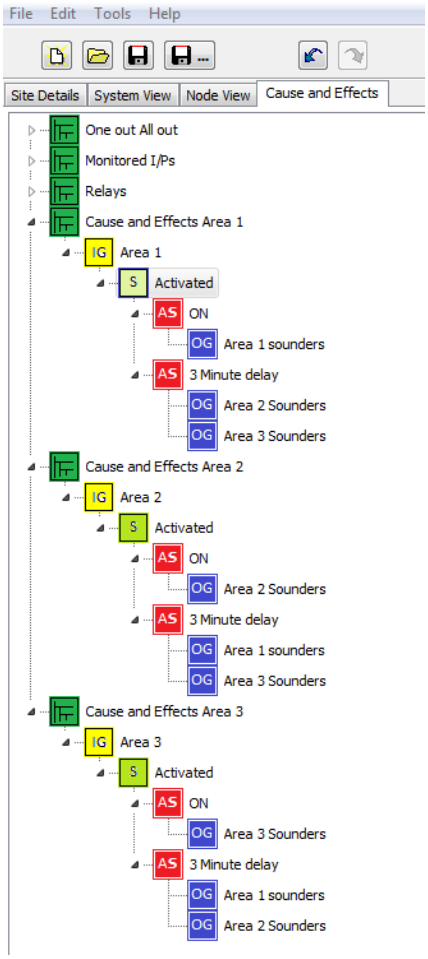
Create three new Output Groups (Area 1 sounders, Area 2 sounders & Area 3 sounders).



Create a new Action Sequence with two steps; an immediate Simple Pulse and a 3 minute (180 secs) delay.



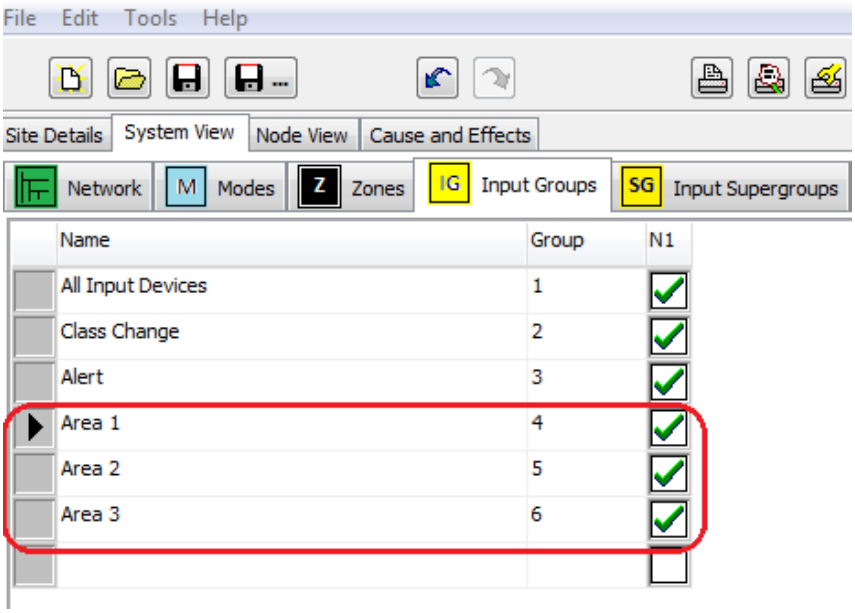
Create three new C&E Blocks with both immediate and delayed evacuation for the three Areas.



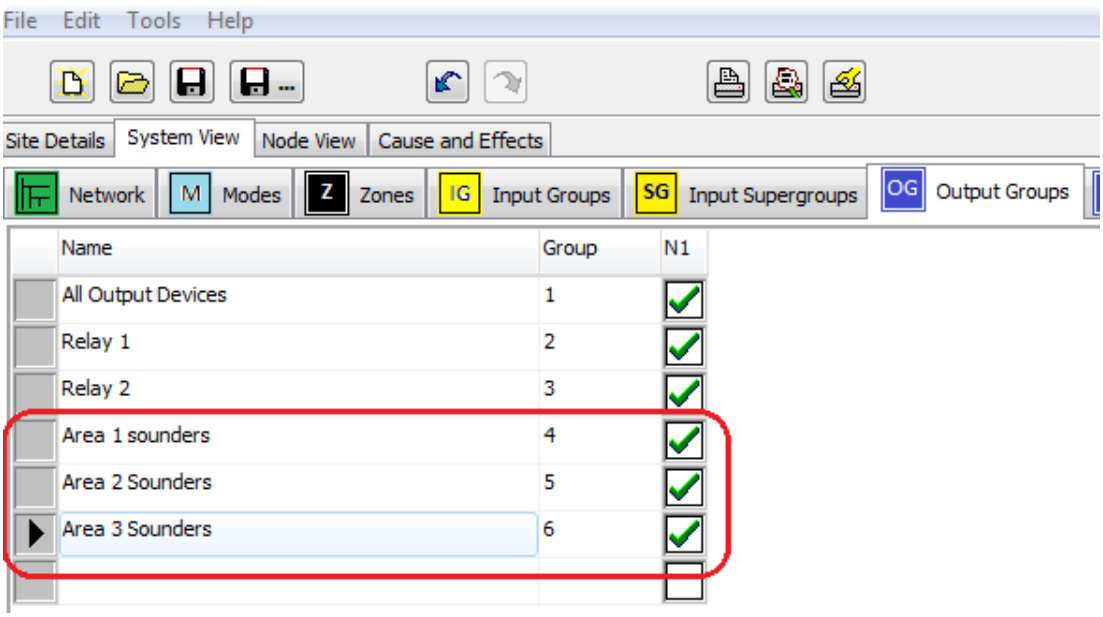
C&E 12 - Three Areas in Two Device Activation with Full Evacuation Delay and Pulse

- Three Areas are to operate singularly as a Two Device Activation System. On activation of the first detector the Area in question will go into full evacuation, whilst the other two Areas will pulse sounders for three minutes being going into full activation, if no Silence has occurred. Should a second detector activate during the three minute pulse period a full evacuation will occur. In addition, activation of any MCP will cause a full evacuation in all three Areas.

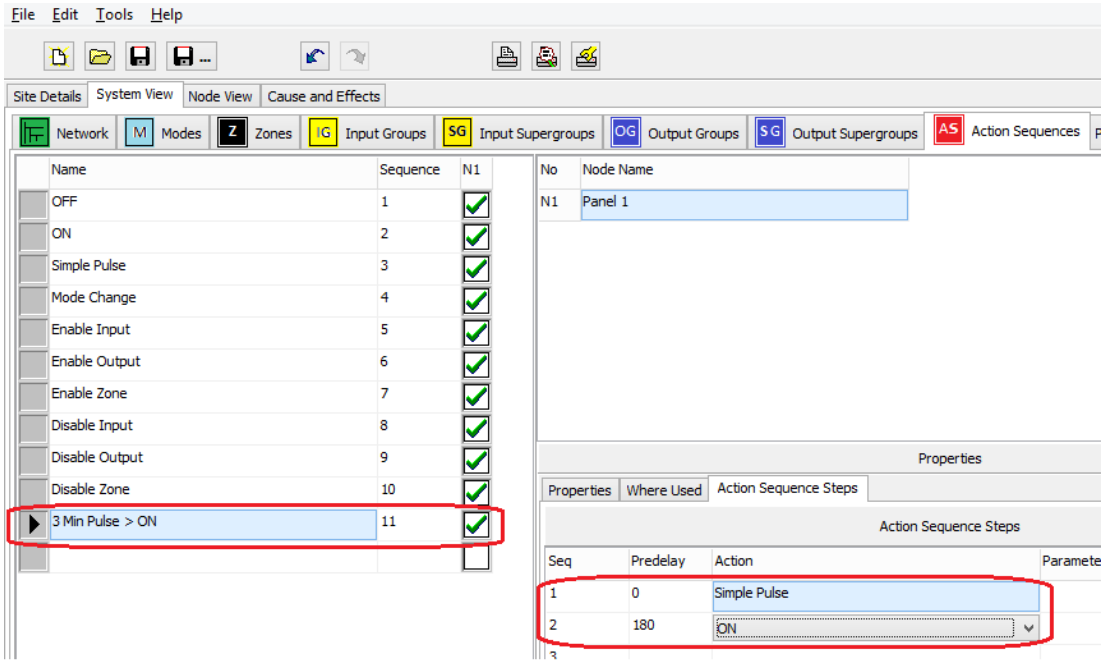
Create three new Input Groups (Area 1, Area 2 & Area 3).



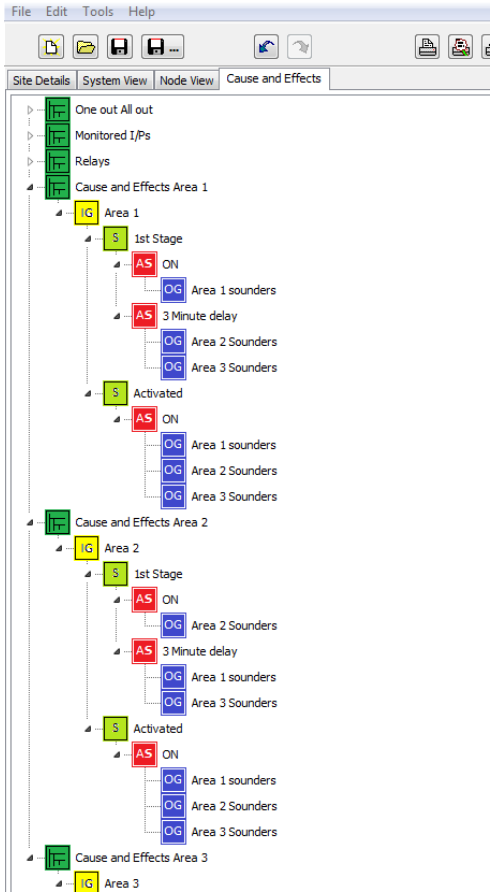
Create three new Output Groups (Area 1 sounders, Area 2 sounders & Area 3 sounders).



Create a new Action Sequence with two steps; an immediate Simple Pulse and a 3 minute (180 secs) delay.



Create three new C&E Blocks for 1st Stage Activation and Full Activation with both immediate and delayed evacuation for the three Areas.



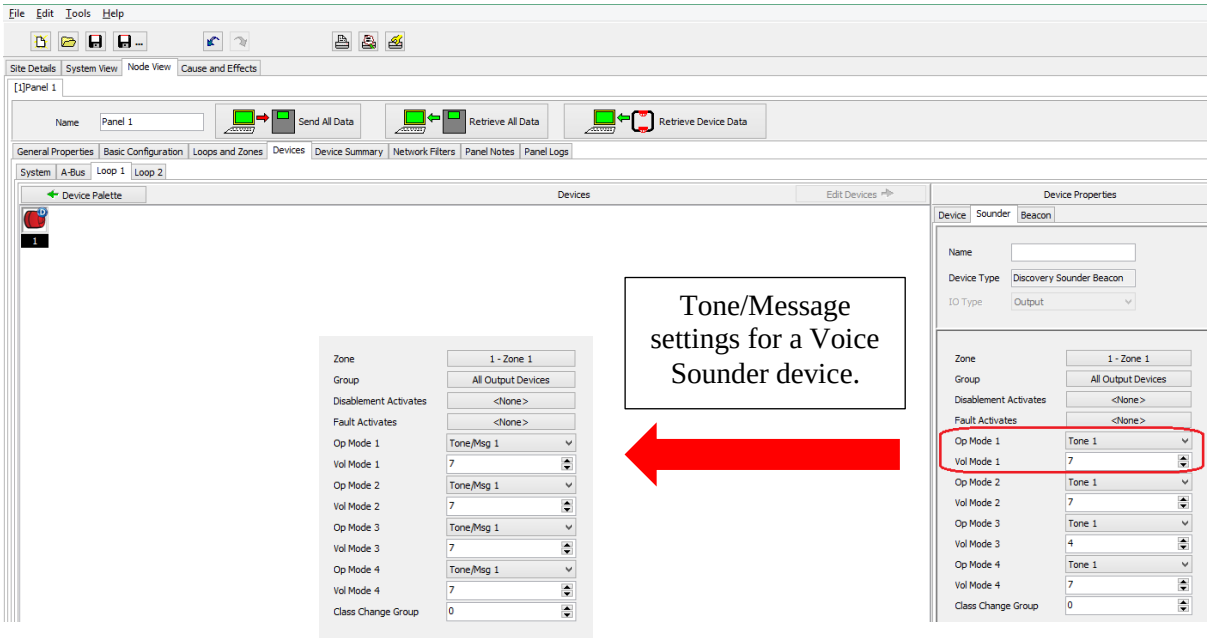
C&E 13 - Changing a Sounder's Tone and Volume

- In this example it is necessary to change the tone and volume level of a Discovery Sounder Beacon.

Select the Discovery Sounder Beacon (Loop 1, Device 1 in this example), then click the 'Edit Devices' button

to view the 'Device Properties' Pane.

In the 'Device Properties' Pane, click the 'Sounder' tab to view the sounder settings (shown below).



Change the tone and volume level, as required.

The following operational and volume modes are shown in the above example:

- Op Mode 1 – Select Tone during Panel Mode 1 (Note: Tone/Message for a voice sounder)
- Vol Mode 1 – Select Volume during Panel Mode 1
- Op Mode 2 (Not used) – Select Tone during Panel Mode 2 (Note: Tone/Message for a voice sounder)
- Vol Mode 2 (Not used) – Select Volume during Panel Mode 2
- Op Mode 3 (Not used) – Select Tone during Panel Mode 3 (Note: Tone/Message for a voice sounder)
- Vol Mode 3 (Not used) – Select Volume during Panel Mode 3
- Op Mode 4 (Not used) – Select Tone during Panel Mode 4 (Note: Tone/Message for a voice sounder)
- Vol Mode 4 (Not used) – Select Volume during Panel Mode 4

In this example, the panel only has one operational mode and one volume mode, i.e. Op Mode 1 and Vol Mode 1. Therefore, setting the other modes and volumes will have no effect. Note: Refer to C&E 8 for creating additional operational modes.

In this example, the Discovery Sounder Beacon has 15 selectable tones (Tone 1 to 15) and seven selectable volume levels (1 to 7). Note that a voice sounder device will also have Message settings in addition to the tone and volume settings. Other types of devices will differ and may not have any selectable tone and volume settings. Refer to the manufacturer's instruction for the different types of tones, volumes and messages.

25 ZFP Default System Devices

A maximum of 64 devices can be fitted to the System Loop (shown above).

For a ZFP Panel the following system devices are fitted by default.

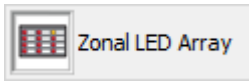
1 – Panel Sounder 1
2 – Panel Sounder 2
3 – Panel Relay 1
4 – Panel Relay 2
5 – Key Switch
6 – Power Supply
7 – Fault Buzzer
8 – Fault Relay
9 – Event Log
10 – Panel Device
11 – Touch Panel
12 – Monitored Input 1
13 – Monitored Input 2
14 – Earth Fault (Monitored)
15 – 24V Fuse (Monitored)

25.1 Optional System Devices

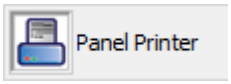
For a ZFP Panel the following optional system devices can be fitted to the System Loop.

- Programmable Function LED for indication purposes.

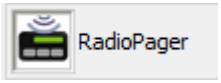
- Programmable Function Switch for Control/Supervisory Actions.



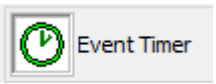
- Programmable Array of LEDs fitted to a peripheral Module for Zone indication.



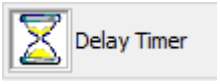
- Optional Printer fitted to a peripheral Module for printing of Events.



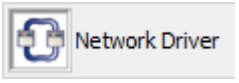
- Radio Transmitter transmits Event Data from the Panel to Radio Pagers.



- Programmable Timer triggers automatically on a defined Day/Time.



- Programmable Timer triggers after a defined Time Interval.



- Hi-Net Network Peripheral Board fitted in the Panel when networking Panels.

- Optional Input Action triggers on a Panel Silence.

- Interface to DRAX Alarm Management System.

26 Glossary of Terms

AL1: Access Level 1 (general user level).

AL2: Access Level 2 (authorised user level).

AL3: Access Level 3 (authorised systems engineer level).

C&E: Cause and Effects. These are an action-reaction combination. The cause is the reason something happens, and the effect is what happens as a result. The panel uses Input Groups and Output Groups for C&E programming purposes.

CIE: Control and Indicating Equipment, i.e. the fire alarm control panel.

Input Device: Any device that can signal an event such as 'fire', 'fault', etc. to the fire alarm and detection system, e.g. fire detector, manual call point, I/O unit.

Input Group: Comprise of grouped input devices and used in the C&E programming.

Input Supergroups: Comprise of selected Input Groups and used in the C&E programming.

I/O (Input/Output) Unit: A device that can be used for receiving inputs and transmitting outputs.

Network: A 'Hi-NET' network arranged as a loop so that a single fault does not prevent the system from working. A network has a maximum number of 128 nodes.

Node: Adding a 'Hi-NET' network PCB to a panel allows it to become a network node. Compact Controllers include a network PCB fitted as standard.

Output Device: Any device that can act on a command from the fire alarm and detection system, e.g. sounder, VAD, relay, I/O unit.

Output Group: Comprise of grouped output devices and used in C&E programming.

Output Supergroups: Comprise of selected Output Groups and used in C&E programming.

Panel: A fire alarm control panel with field device loops connected to it that can be used to configure a fire alarm and detection system. A panel is a node when connected as part of a network.

System Devices: Include panel sounders, panel relays, panel function switches, panel touchscreen, etc.

VAD: Visual Alarm Device. Provides a visual indication of an alarm condition, e.g. Xenon beacons or rotating beacons (see EN54-23).

Zones: Geographical location of a device (maximum of 200 zones per panel).

Addendum 1 – EACIE ZTOOLS Programming Guide

ADDENDUM 1 TO DOCUMENT NO. DFU5000515 (ZFP ZTOOLS PROGRAMMING GUIDE).

THIS ADDENDUM IS DOCUMENT NO. DFU5000517.

EVACUATION ALERT CONTROL AND INDICATING EQUIPMENT (EACIE)

EACIE - ZTOOLS PROGRAMMING GUIDE

Approved Document No. DFU5000517 Rev 1

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IMPORTANT NOTICE

THIS GUIDE HAS BEEN WRITTEN FOR AUTHORISED SYSTEM ENGINEERS ONLY. ENSURE YOU HAVE ATTENDED C-TEC'S AUTHORISED TRAINING COURSE BEFORE USING THE ZTOOLS AND ATTEMPTING TO PROGRAM THE EACIE PANEL.

Note: This document has been written as a generic document to detail how to initially program a basic EACIE panel. It is not site specific as each site will require bespoke programming.

1 Installing ZTOOLS

Refer to main ZFP ZTOOLS Programming Guide (DFU5000515) for details.

2 Connecting the PC/Laptop

Refer to main ZFP ZTOOLS Programming Guide (DFU5000515) for details.

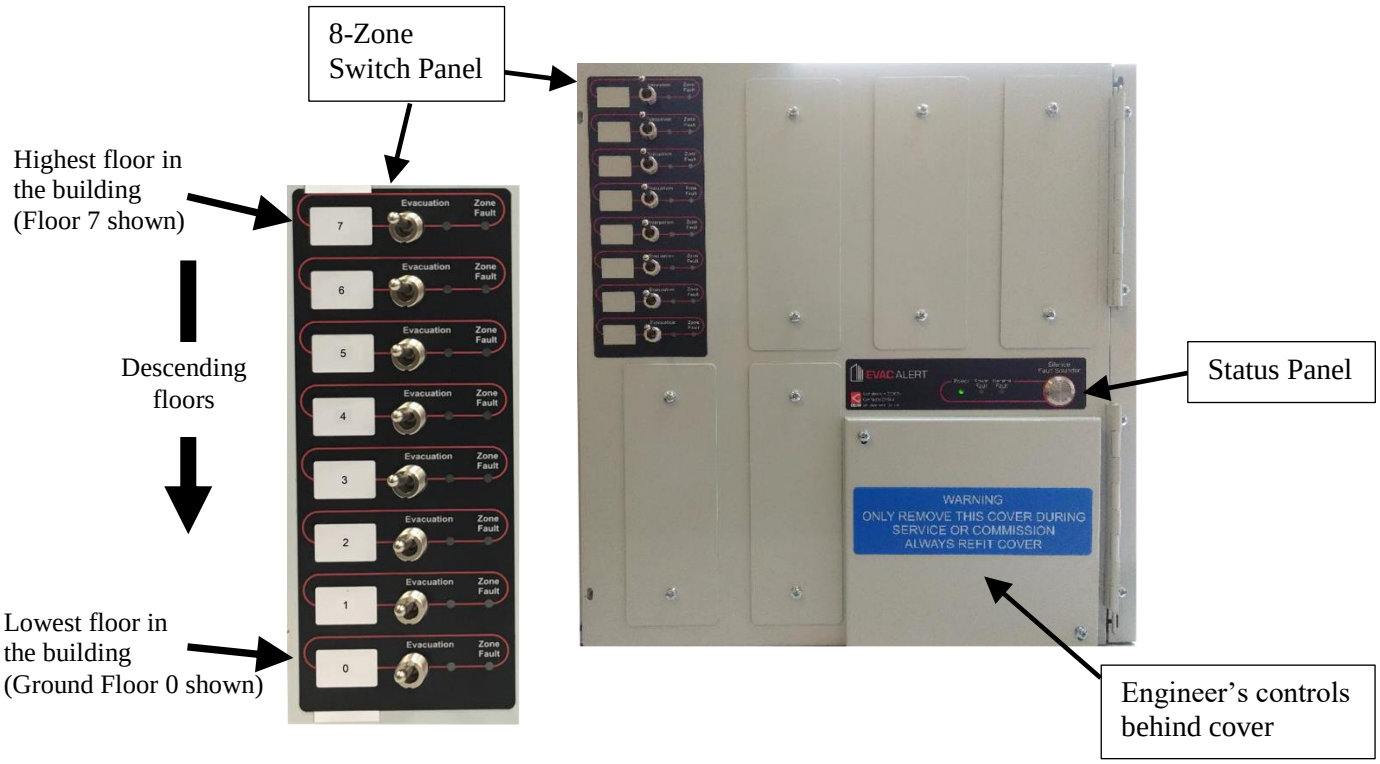
3 EACIE Programming Overview

Before programming, you should have already set up your PC/laptop with the ZTOOLS (with necessary drivers) and connected it to the 'powered up' EACIE panel enabling communication.

A summary of the EACIE programming steps is listed below. This is a logical sequence but you may prefer to program the EACIE panel in a different order.

- EACIE panel configuration concept
- Commissioning the EACIE panel by performing a Loop Learn
- Retrieving the EACIE panel's data
- Adding/Naming EACIE panel zones
- Adding/Naming EACIE panel output groups
- Viewing/Naming the I/O units
- Assigning I/O units to zones and groups
- Adding/Naming the EACIE status and switch panel
- Assigning switches to zones and groups
- Entering site details
- Sending the config file to the EACIE panel

4 The EACIE Panel Configuration Concept



Note: Toggle switches may be labelled on a zone-by-zone or floor-by-floor basis. A cutomisable 'slide-in' label system is used on the EACIE panel for the 8 zone switch panel(s).

- The EACIE panel uses C-TEC's CAST protocol.
- An EACIE panel loop is only populated by CAST I/O units, i.e. CAST sounder controllers (Pt. Nos. CA736 & CA737).
- The maximum number of devices per loop is 50 with a maximum of 200 devices per panel.
- An EACIE panel only has one status panel but may have several 8-zone switch panels depending on the number of evacuation alert zones in a building.
- One switch panel has eight toggle switches. One switch is provided for each evacuation alert zone. The switch DOWN position activates sounders in the associated evacuation alert zone. **Note:** Toggle switches can be labelled on a zone-by-zone or floor-by-floor basis.
- A zone is defined as an evacuation alert zone within a building. An evacuation alert zone may contain flats, part floors, or a complete floor of a building.
- Up to 48 evacuation alert zones on a single standalone EACIE panel, i.e. six, 8-zone switch panels.
- Up to 200 evacuation alert zones on a shared EACIE system.
- Various EACIE models are available including: 1 Loop 8 Zone EACIE panel, 2 Loop 8 Zone EACIE panel, etc.
- Cause & Effect (C&E) programming is NOT USED with an EACIE panel.

5 Commissioning the EACIE Panel

First, you need to find out what devices are installed on the EACIE panel and get this information into the ZTOOLS on your laptop. All the loop devices connected to the EACIE panel need to have a unique address assigning to them. In addition, the panel needs to read all the loop devices and identify their address by performing a 'loop learn'.

There are two recommended options to do this:

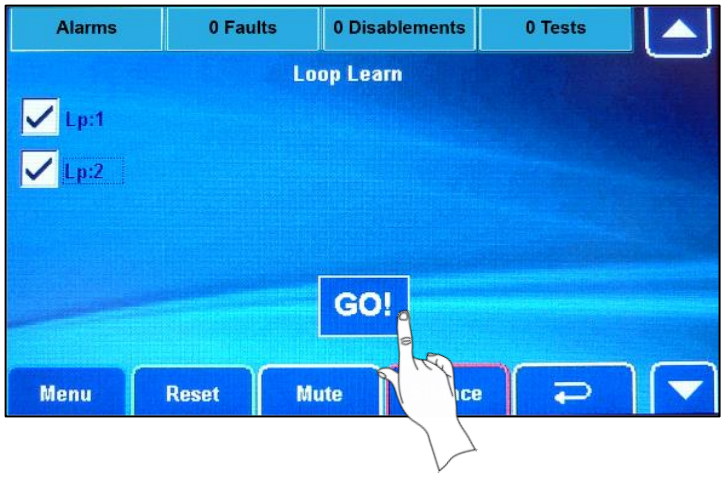
- **Option 1**: At **Access Level 3** > **Commissioning Functions** > **Auto Address** option.

  The Auto Address function will automatically assign an address to each loop device in sequentially wired order.

- **Option 2**: First, use a CAST Hand-Held Programmer (Part No. CAPROG) to manually assign an address to each loop device.
  Second, at **Access Level 3** > **Commissioning Functions** > **Loop Learn** option.

At the EACIE panel perform the following. **Note:** The default code for access level 3 is **4444**.

- Using Option 2 (above), at **Access Level 3** > **Commissioning Functions** > **Auto Address**.
- Select the loop(s) you want the panel to learn and press the '**GO**' button (shown below).



THE LOOP LEARN WILL SIMULTANEOUSLY ASSIGN ALL I/O UNITS TO OUTPUT GROUP 1 AND ZONE 1.

AFTER A SUCCESSFUL LOOP LEARN YOU WILL HAVE A SINGLE ACTIVE ZONE (I.E. ZONE 1) AND A SINGLE "ONE OUT, ALL OUT" EACIE SYSTEM.

IMPORTANT NOTE:

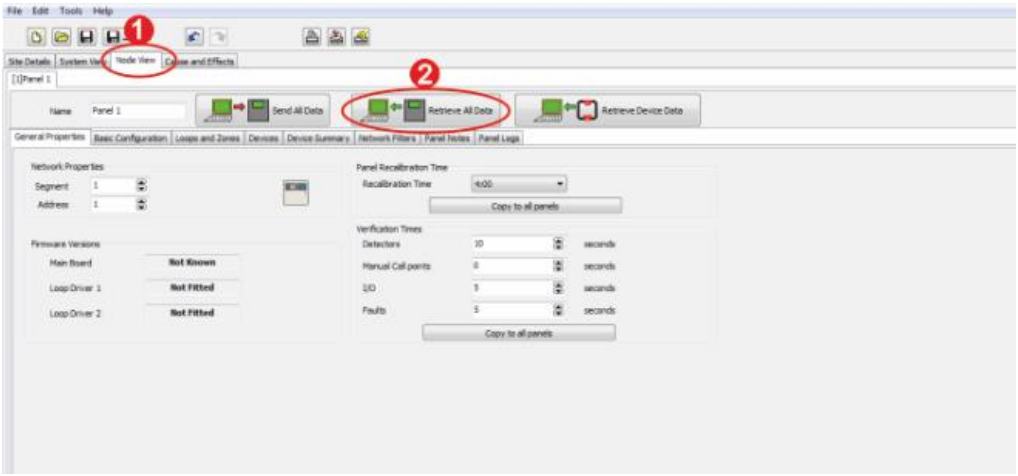
BS 8629 STATES THAT A "MASTER" OR "WHOLE BUILDING" EVACUATION CONTROL, WHEREBY A SIMULTANEOUS EVACUATION ALERT IS SOUNDED IN ALL FLATS BY OPERATION OF A SINGLE CONTROL SHOULD NOT BE PROVIDED. THEREFORE, YOU CANNOT HAVE A SINGLE ACTIVE ZONE (I.E. ZONE 1) "ONE OUT, ALL OUT" EACIE SYSTEM!

THESE DEFAULT SETTINGS MUST BE MODIFIED USING THE ZTOOLS!

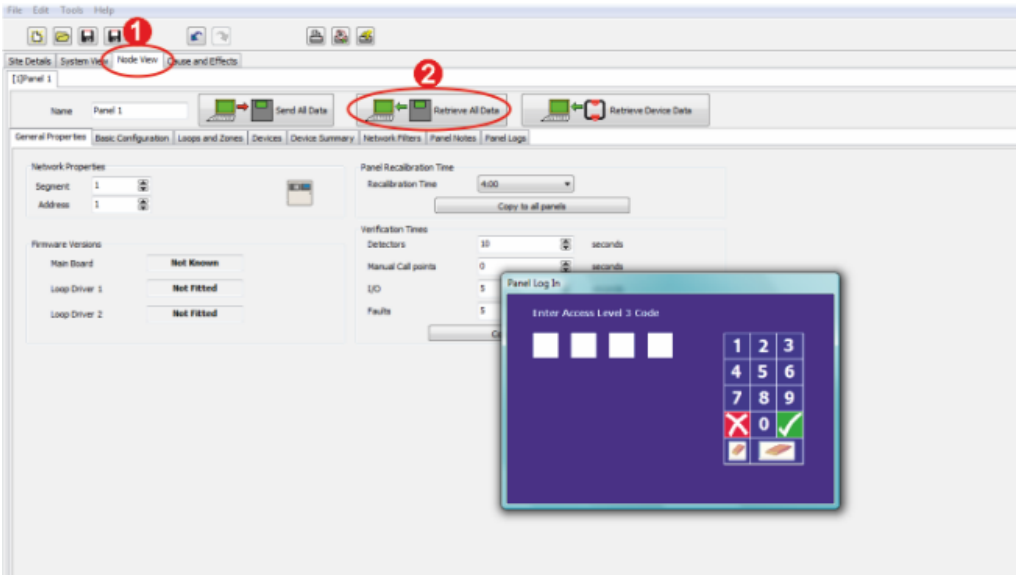
6 Retrieving the EACIE Panel's Data

You now need to transfer the 'loop learn' data from the EACIE panel to the laptop.

- At the laptop, open up the ZTOOLS and click **Node View** > **Retrieve All Data** (shown below):



- When prompted, enter the AL3 code (shown below). Note the default code is **4444**.



All device data from the panel will upload into the ZTOOLS.

6.1 Saving and Opening Site Configuration Files

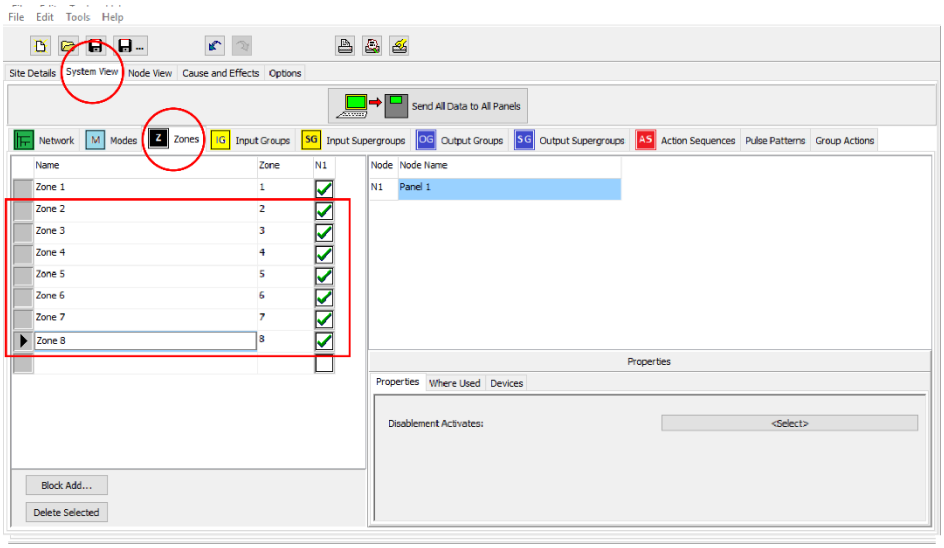
Site configuration files, which include device settings, may be opened from, and saved to, a connected laptop by clicking the **Open** and **Save** buttons at the top of the main screen. Note that by default the ZTOOLS saves configuration files with a '**.zfp**' extension.

When you have the 'loop learn' data in the ZTOOLS create a suitable filename, e.g. 'SiteName_date.zfp' and save that information on the laptop.

7 Adding/Naming EACIE Panel Zones

A zone is defined as an evacuation alert zone. By default, one zone is created by the ZTOOLS, i.e. Zone 1.

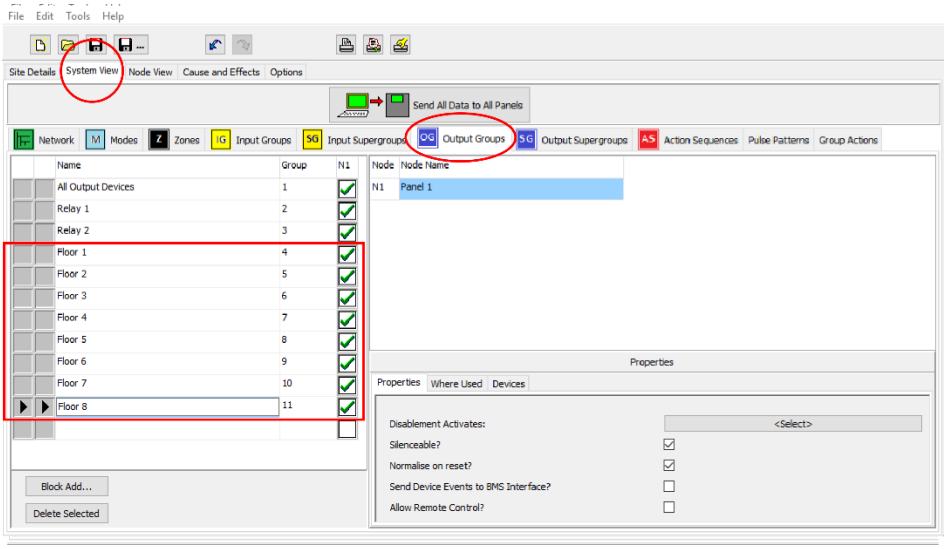
- To view the default zones, click **System View > Zones** (shown below).
- You can Add/Edit/Delete the panel's zones by clicking in the main pane.
- To add zones, click in the Name column to add/name additional zones.
  In this example 'Zone 2' to 'Zone 8' have been added.



8 Adding/Naming EACIE Panel Output Groups

An output group comprises of grouped output devices. By default, three output groups are created by the ZTOOLS, i.e. All Output Devices, Relay 1 & Relay 2.

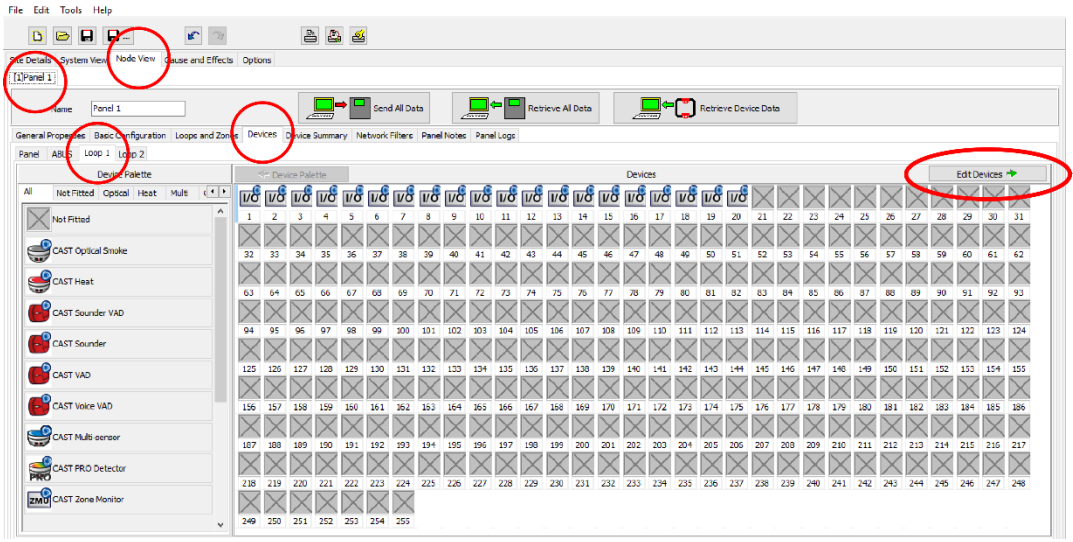
- To view the default output groups, click **System View** > **Output Groups** (shown below).
- You can Add/Edit/Delete the panel's output groups by clicking in the main pane.
- To add output groups, click in the Name column to add/name additional output groups.
  In this example 'Floor 1' to 'Floor 8' have been added.



9 Viewing the I/O Units

After the 'loop learn' data has been downloaded to the laptop the loop devices, i.e. CAST I/O units, are automatically populated in the ZTOOLS.

- To view the loop devices, click **Node View** > **Panel 1** > **Devices** > **Loop 1** (example shown below):

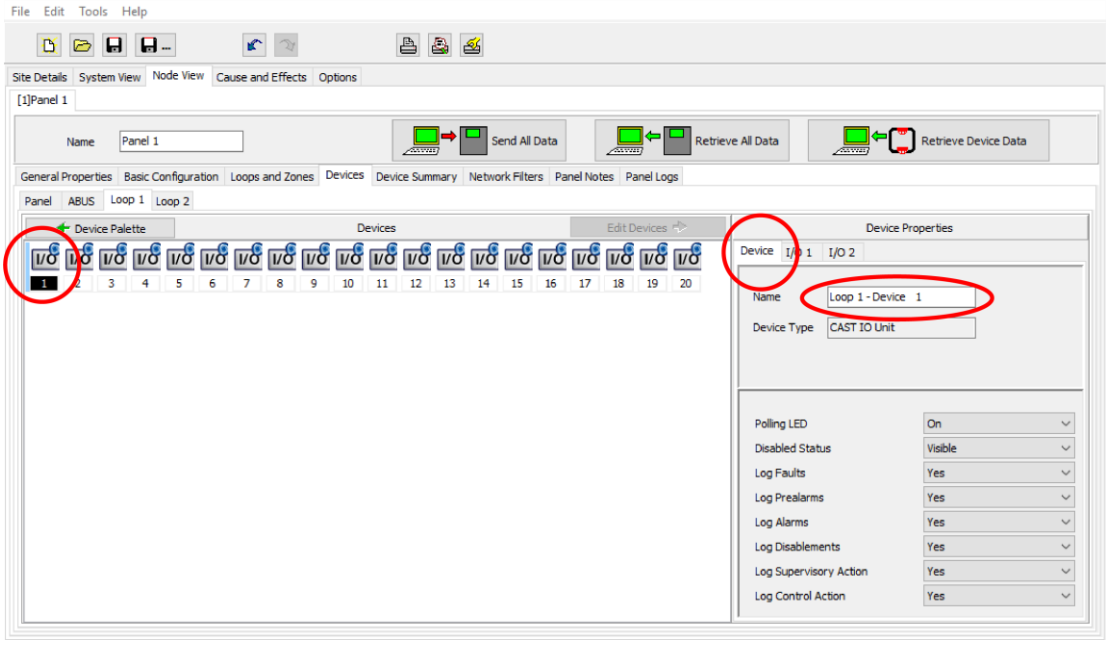


This screen gives a visual representation of all the loop devices in icon form. In the above example Loop 1 Address 1 (L:1 A:001) to Loop 1 Address 20 are all CAST I/O Units.

10 Naming the I/O Units

Note: The I/O units should be automatically named by the ZTOOLS.

- To view the names of the I/O units, continuing from the previous Step 9, click **Edit Devices**.
- Click the I/O unit icon (address 1), then in the Devices Properties pane, click **Device** tab. In this example 'Loop 1 - Device 1' is the name of the I/O unit.



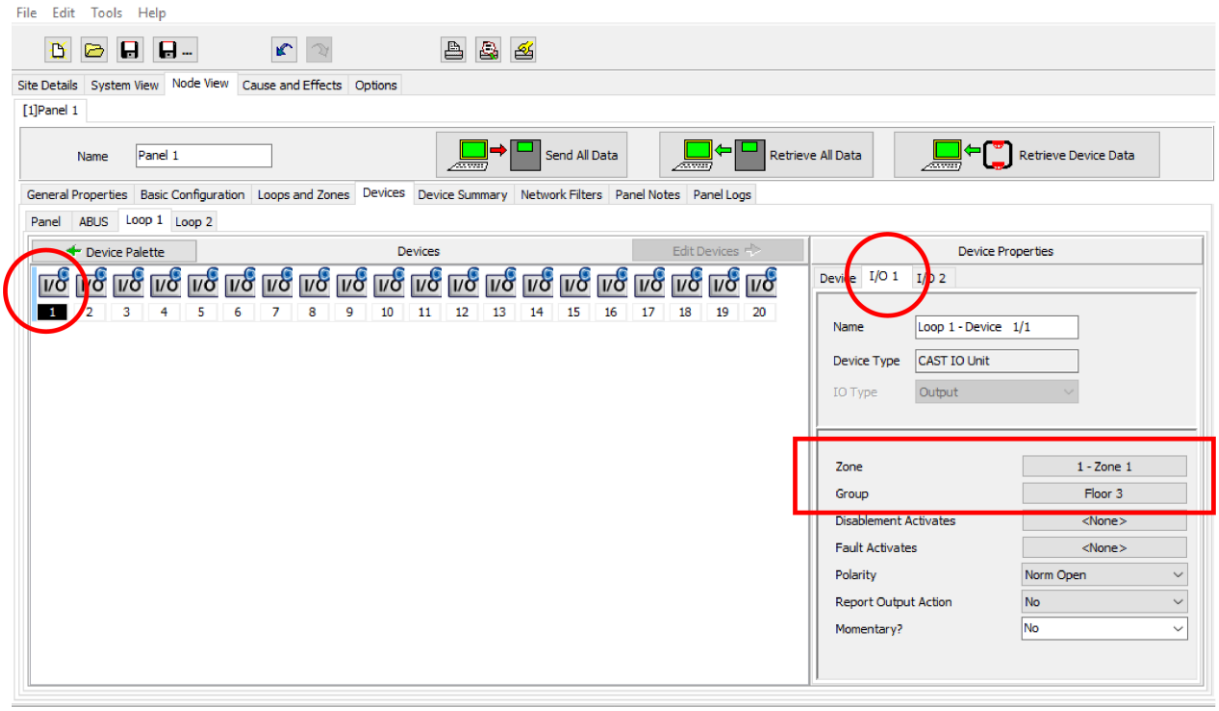
11 Assigning I/O Units to Zones and Groups

- Continuing from the previous Step 10, for the first CAST I/O unit, click the I/O unit icon (address 1), then in the Devices Properties pane, click **I/O 1** tab and enter the relevant Zone and Group for the I/O unit.

  In this example, for I/O 1, Zone is assigned to 'Zone 1' and Group is assigned to 'Floor 3'.

- Repeat this assigning procedure for the remaining I/O units.

- **Note: I/O 2** tab does not need editing.

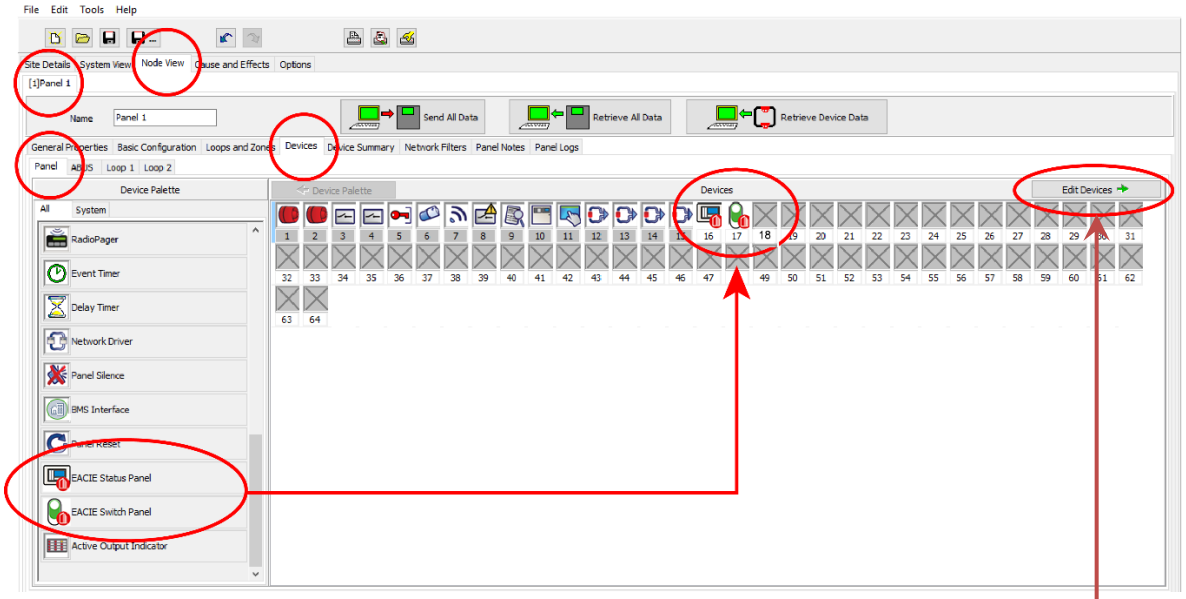


12 Adding the EACIE Status and Switch Panel

The EACIE panel only has one status panel but may have several 8-zone switch panels.

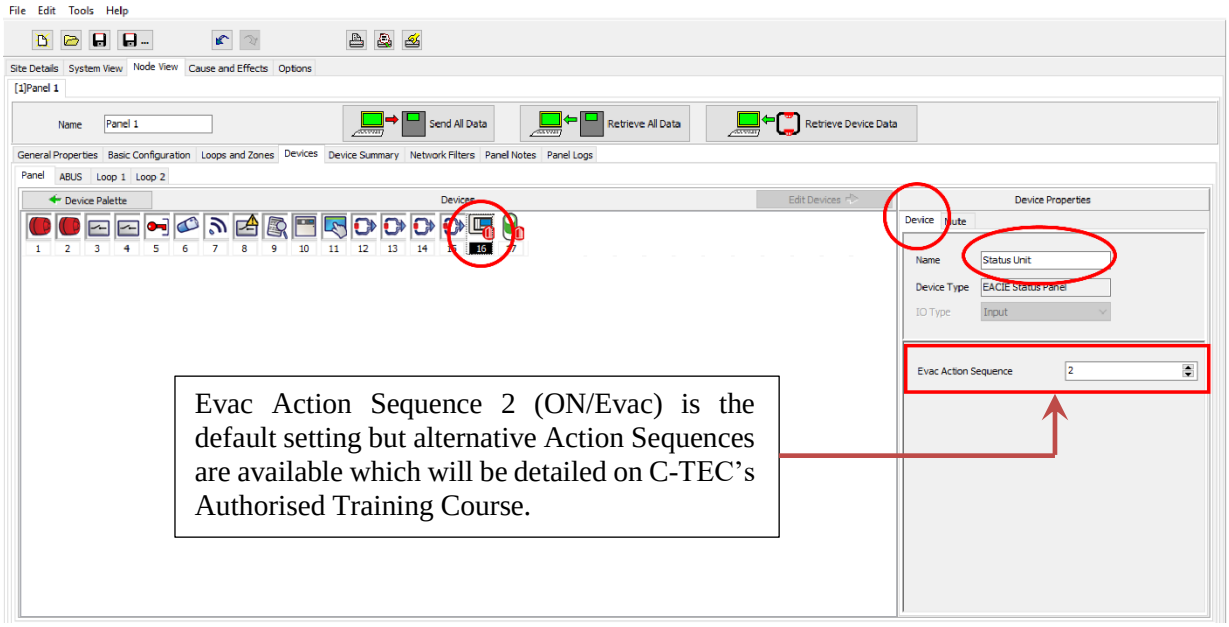
- To add the EACIE panel units click **Node View** > **Panel 1** > **Devices > Panel**.

  In this example one EACIE status panel (address 16) and one EACIE switch panel (address 17) have been added to the panel's device palette.

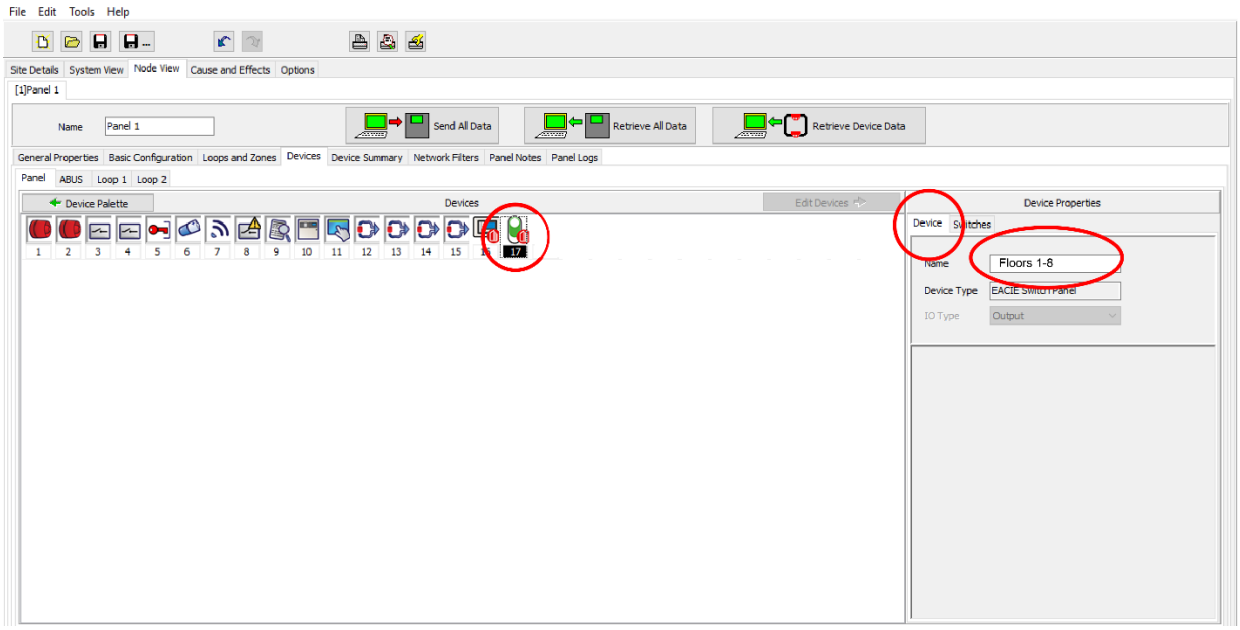


13 Naming the EACIE Status and Switch Panel

- To name the EACIE panel units, continuing from the previous Step 12, click **Edit Devices**.
- To name the status panel click the status panel icon (address 16), then in the Devices Properties pane click **Device** tab and enter the name ('Status Unit' is shown in this example).



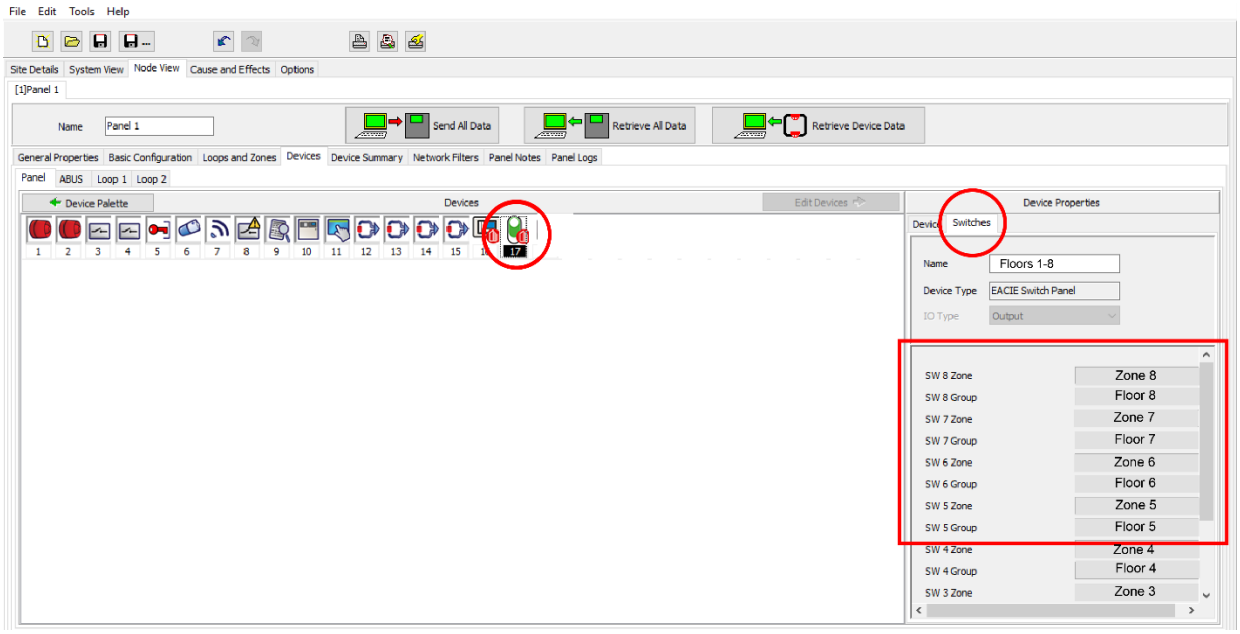
- To name the switch panel click the switch panel icon (address 17), then in the Devices Properties pane, click **Device** tab and enter the name (‘Floors 1-8’ is shown in this example).



14 Assigning Switches to Zones and Groups

- Continuing from the previous Step 13, to assign switches for the switch panel (named ‘Floors 1-8’), click the switch panel icon (address 17), then in the Devices Properties pane, click **Switches** tab and enter the relevant Zone and Group for each individual switch.

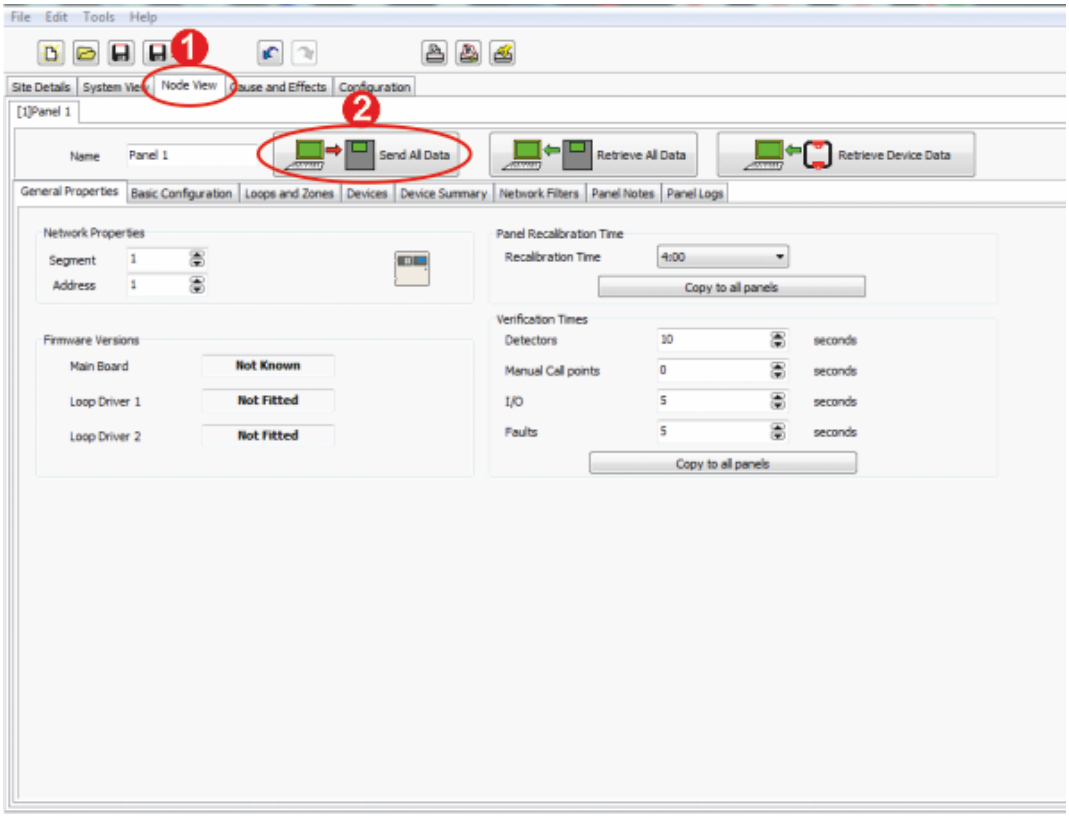
  In this example SW 8 Zone is assigned to ‘Zone 8’, SW 8 Group is assigned to ‘Floor 8’, SW 7 Zone is assigned to ‘Zone 7’, SW 7 Group is assigned the ‘Floor 7’, and so forth.



15 Entering the Site Details

Refer to main ZFP ZTOOLS Programming Guide (DFU5000515) for details.

16 Sending the Config File to the EACIE Panel

Remember to save the completed site config file to your laptop (refer to Step 6.1).

Once you have completed the site configuration, click **Node View** > **Send All Data** (shown below).