BUCHANAN COMPUTING

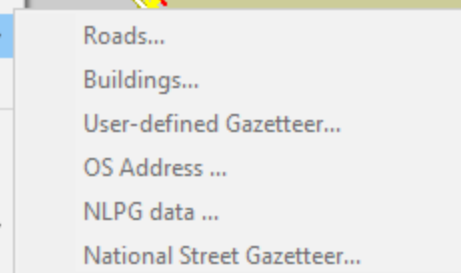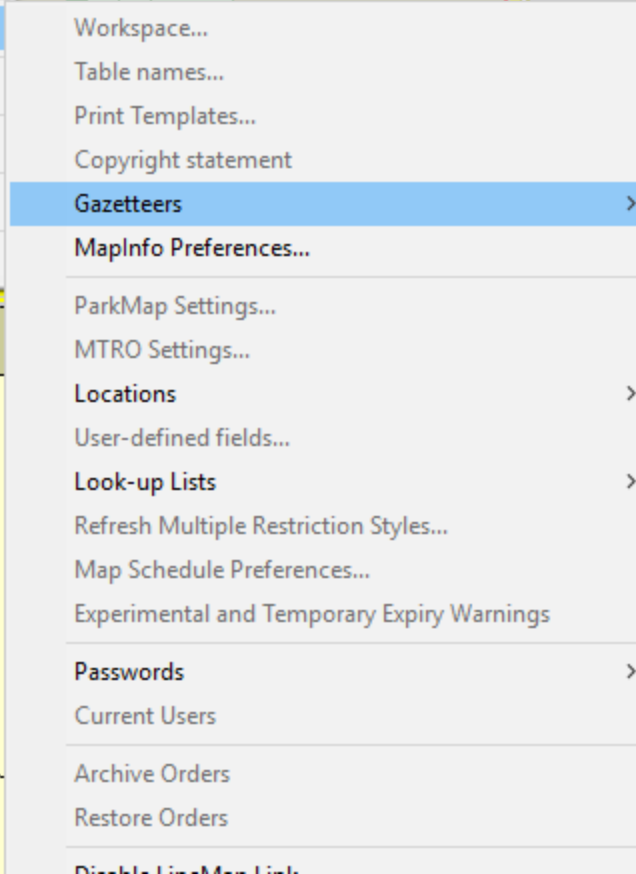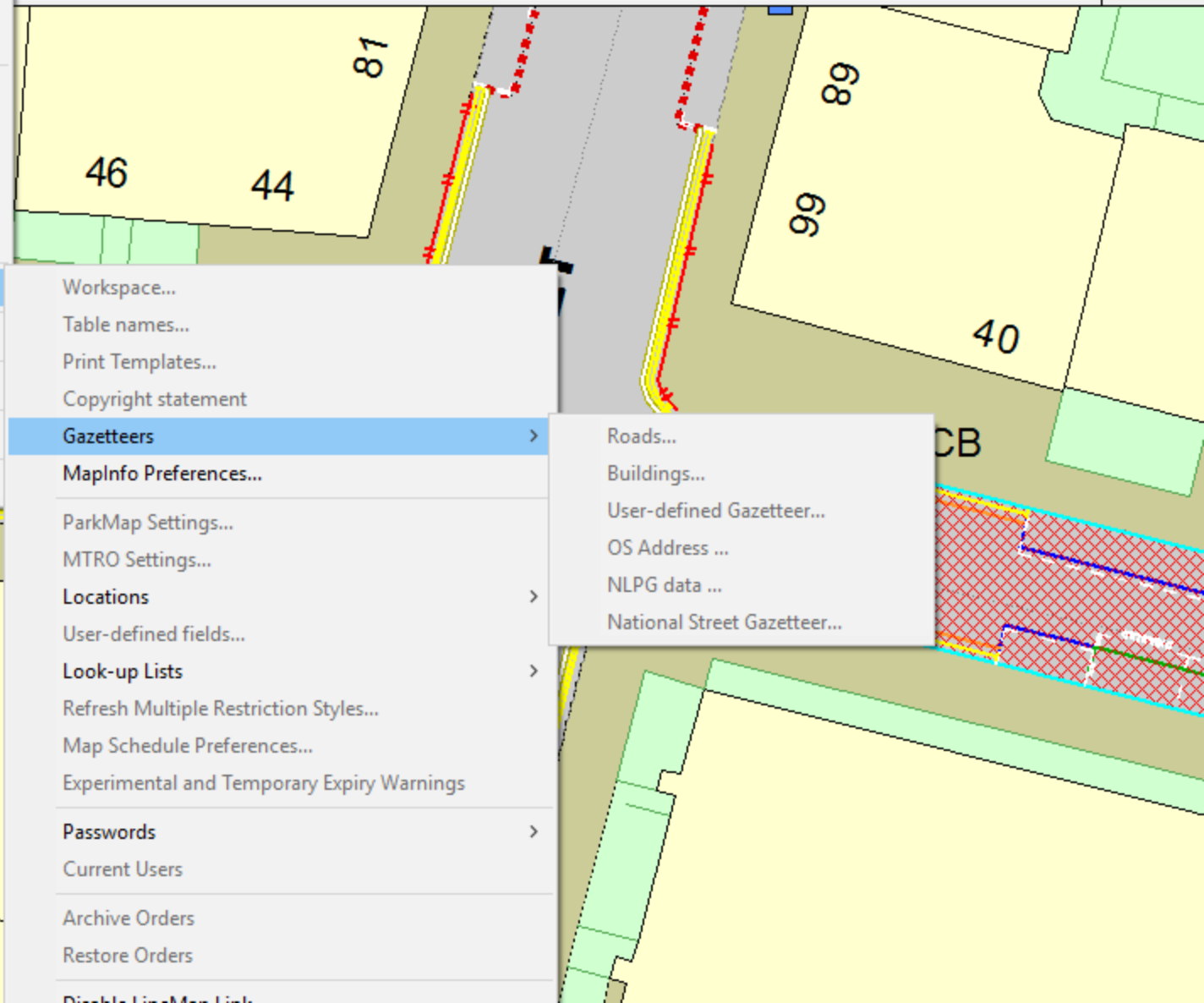# Transforming ParkMap with MapInfo 64-bit

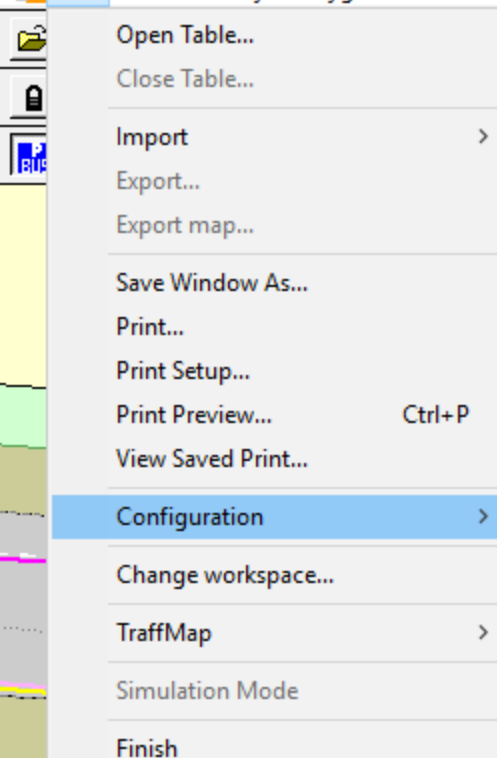David Wilson and Robin Morrison

Introduction

- Buchanan Computing have been developing MapInfo applications since 1998
- ParkMap is the UK's leading solution for providing local authorities with an inventory of parking and moving traffic regulations
- Management of traffic order data from data entry to legal documentation
- Used by over 100 authorities ranging from a single to 30 user licence

ParkMap 6.2: The last 32-bit version

- ParkMap was developed primarily in MapBasic
- The user interface is based on simple menus and toolbars
- It has evolved over the years and become cluttered
  - Menus, toolbars and functionality have been bolted on
  - Looks a bit tired
  - Not as user friendly than it once was, some features are hard to find
- Still compatible with MapInfo 8.5
  - Restricts our use of later functionality and performance

File   View   Query   Polygons   Orders   Restrictions   Schedules   Map Schedules   Help

File menu:
- Open Table...
- Close Table...
- Import
- Export...
- Export map...
- Save Window As...
- Print...
- Print Setup...
- Print Preview...   Ctrl+P
- View Saved Print...
- Configuration
- Change workspace...
- TraffMap
- Simulation Mode
- Finish

Configuration submenu:
- Workspace...
- Table names...
- Print Templates...
- Copyright statement
- Gazetteers
- MapInfo Preferences...
- ParkMap Settings...
- MTRO Settings...
- Locations
- User-defined fields...
- Look-up Lists
- Refresh Multiple Restriction Styles...
- Map Schedule Preferences...
- Experimental and Temporary Expiry Warnings
- Passwords
- Current Users
- Archive Orders
- Restore Orders

Gazetteers submenu:
- Roads...
- Buildings...
- User-defined Gazetteer...
- OS Address ...
- NLPG data ...
- National Street Gazetteer...

Surgery

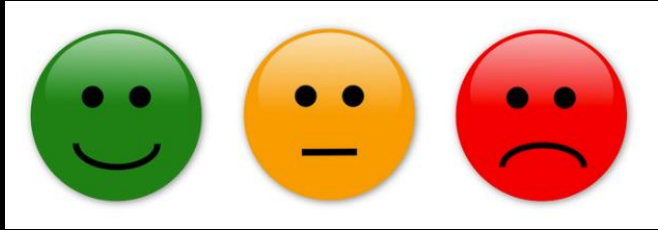46   44   81   89   99   40   CB   49   51

ParkMap 7: The 64-bit version

- This was an opportunity to address the ParkMap user experience by creating:
  - Interactive ParkMap Legend: Clear picture of what is on the map
  - Right click: Quick access to the most frequently used items
  - Ribbons: Grouped into tasks and appear as needed

- Then refine these areas in the context of:
  - Accessing Traffic Order data
  - Creation and editing Traffic Orders
  - Setting up associated data

ParkMap

Select · View · Save View · Find View · Map Layers · Find · Google · Ruler · Legend · Info · Orders · Schemes · Outline · Colour · View · Locate · Audit Info · Generate · Save · Confirmed · Proposed · Print Preview · Select · Guide Lines

Security | Display | Labels | Print | Select | Guide Lines

1

Legend

View Mode - Items effective on 16/04/2018

- Favourites
- Static
  - Lines
    - Disabled Bay
    - Loading Bay
    - No Loading
    - No Waiting
    - No Waiting at Any Time
    - Pedestrian Crossing
    - Resident Permit Holders (
    - School entrance
  - Multiple Restrictions
    - MR13: No Waiting,No Loa
  - Paid for Parking
    - Pay and Display Parking
  - Suspension
- Moving
  - Moving
  - Other
  - speed_limit
  - Structural and Environmental
- Inventory
  - Other
  - Parking Signs
- Non-Order
  - All Non Orders

2

No waiting at any time

Resident Permit Holders Only 7am-7pm

Disabled Bay

20 MPH Zone

Find Selection .... Ctrl+G
Select All from Selection Layer

Clear Cosmetic Layer
Save Cosmetic Objects...

Previous View .... Alt+Left
View Entire Selection Layer
Change View

Locate Most Recently Added
Favourite Views
View Entire layer
Clear Work Area
Clear Selected Drawing Layer Item/s

3

Flexible Design

- Everyone has an opinion on the right way to design the interface
  - Users
  - Trainers
  - Sales
  - Technical Support
- We knew we would have to change things after consultation

How did we achieve this?

- In 32-bit MapInfo MapBasic was used to modify the interface using statements such as Create Buttonpad or Create menu

- In 64-bit MapInfo modifications are carried out using a .NET API either via MapBasic or a .NET Language such as C#

What is .NET?

- .NET is Microsoft's free developer platform
- Extensibility Interface is the MapInfo .NET API
- Microsoft's Visual Studio C# development tools opened up the flexibility of creating whatever interface we wanted.

The Development Process

- Ideally ParkMap would be rewritten in C# with minimal MapBasic
- Time and resourcing meant we used a hybrid approach:
  - MapBasic for existing functionality and dialogs
  - MapBasic plus MapInfo's RibbonLib for creating Ribbons and Tabs
  - C# with .NET to replace the old Toolbars with an interactive Legend
- But the added flexibility these tools gave us meant more complex code…

Building the Interface 32 bit

MapBasic 32bit


```
create ButtonPad "Display" as

    pushbutton
        icon 45
        id 103
        calling ButtonOne
        helpmsg "This is Button one\nButton one, Press here for more information"

    separator

    pushbutton
        Icon 8
        ID 99
        Calling ButtonTwo
        HelpMsg "This is Button two\nButton two, Press here for more information"

    toolbutton
        id 151
        icon 200
        Cursor MI_CURSOR_CROSSHAIR
        DrawMode DM_CUSTOM_POINT
        calling ButtonThree
        helpmsg "This is tool Button one\nClick on map"

    ToolbarPosition(1,1)
    fixed   show
```

Building the Interface 64 bit

MapBasic 64bit
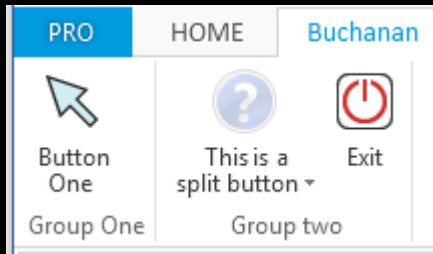

```
'Create Tab
nCtrlIdx     = RBNAddTab("TAB1", "Buchanan", "First tab")

'Create Group
If NOT RBNTabGroupExists("TAB1", "GROUP1") Then
    nCtrlIdx = RBNTabAddGroup("GROUP1", "Group One", "TAB1")
end if

'Add Button
nCtrlIdx = RBNGroupAddButton("BUTTON1","Button One","","TAB1","GROUP1")
If nCtrlIdx > 0 Then
    'set tool tip
    Call RBNControlSetToolTipIdx(nCtrlIdx, "This is Button one", "Press here for more information", "")
    'set icon
    Call RBNControlSetIconsIdx(nCtrlIdx, CONTROL_SIZE_LARGE, MI_IMG_MAP_SELECT_16, MI_IMG_MAP_SELECT_32)
    'set custom procedure
    sproc = "ButtonOne"
    call RBNControlSetCustomMBXHandlerIdx(nCtrlIdx, sproc)
End If

'Create Group 2
If NOT RBNTabGroupExists("TAB1", "GROUP2") Then
    nCtrlIdx = RBNTabAddGroup("GROUP2", "Group two", "TAB1")
    call RBNGroupSetCollapsedIcon("TAB1", "GROUP2",MI_IMG_APP_TECHSUPPORT_16)
end if
'add split button
nCtrlIdx = RBNGroupAddControl("SPLIT1","This is a split button","F2",ControlType_SplitButton,"TAB1","GROUP2")
    'change icon of button
Call RBNControlSetIconsIdx(nCtrlIdx, CONTROL_SIZE_LARGE, MI_IMG_APP_TECHSUPPORT_16, MI_IMG_APP_TECHSUPPORT_32)

'add menu to split button
nCtrlIdx = RBNSplitButtonAddGroup("MENU1","Split button","TAB1","GROUP2","SPLIT1")
'add buttons to menu
nCtrlIdx = RBNSplitButtonGroupAddControl("SPLITBUTTON1", "Button 1", "", ControlType_Button,"TAB1","GROUP2","SPLIT1", "MENU1")
If nCtrlIdx > 0 Then
    'set tool tip
    Call RBNControlSetToolTipIdx(nCtrlIdx, "This is Split Button one", "Press here for more information", "")
    'set icon
    Call RBNControlSetIconsIdx(nCtrlIdx, CONTROL_SIZE_LARGE, MI_IMG_APP_SYSTEMINFO_32, MI_IMG_APP_SYSTEMINFO_32 )
    'set custom procedure
    sproc = "SplitButtonOne"
    call RBNControlSetCustomMBXHandlerIdx(nCtrlIdx, sproc)
End If

'add tool button
nCtrlIdx = RBNSplitButtonGroupAddControl("SPLITBUTTON2", "Button 2", "", ControlType_ToolButton,"TAB1","GROUP2","SPLIT1", "MENU1")
If nCtrlIdx > 0 Then
    'set tool tip
    Call RBNControlSetToolTipIdx(nCtrlIdx, "This is Split Button two", "Click on map", "")
    'set icon
    Call RBNControlSetIconsIdx(nCtrlIdx, CONTROL_SIZE_LARGE, MI_IMG_LAY_SYMBOL_16, MI_IMG_LAY_SYMBOL_32)
    'set custom procedure
    call RBNControlSetCustomMBXHandlerIdx(nCtrlIdx, "SplitButtontwo")
    call RBNControlSetDrawModeIdx(nCtrlIdx,DM_CUSTOM_POINT )
    call RBNControlSetMICursorIdx(nCtrlIdx,MI_CURSOR_CROSSHAIR,"")
    sproc = "SplitButtontwo"
    call RBNControlSetCustomMBXHandlerIdx(nCtrlIdx, sproc)
End If

    'Add Button
nCtrlIdx = RBNGroupAddButton("ENDBUTTON","Exit","","TAB1","GROUP2")
If nCtrlIdx > 0 Then
    'set tool tip
    Call RBNControlSetToolTipIdx(nCtrlIdx, "End program", "Exit", "")
    'set icon
    Call RBNControlSetIconsIdx(nCtrlIdx, CONTROL_SIZE_LARGE, MI_IMG_APP_exit_16, MI_IMG_APP_exit_32)
    'set custom procedure
    sproc = "endprogram"
    call RBNControlSetCustomMBXHandlerIdx(nCtrlIdx, sproc)
End If
```
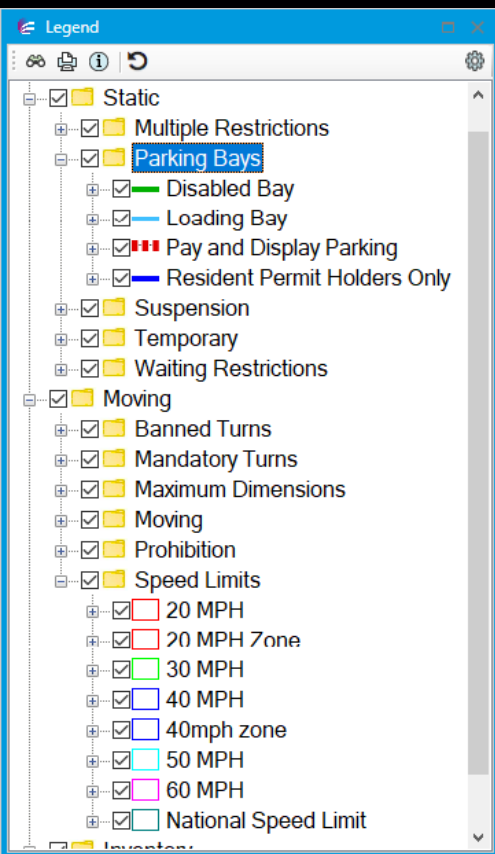
Menu Map

File | View | Query | Polygons | Orders | Restrictions | Schedules | Help

Caption	Module	Procedure	ID	Shortcut	BCIcon	Icon	IconSize	Cursor	DrawMode	Type	Tool tip	Hide
			a	a	a	a	a	a	a			a
		Padlock			4001		3			PUSH	Toggle to update orders	
None						524						
Select		1701				524	3					
Select												
Select		1701				0	3	0	34	TOOL	Select an item	
Region Select		PM_PolygonSelect				516	3	138	34	TOOL	Select items within a region	
Polygon Select		PM_FreeformPolygonSelect				3	3	138	35	TOOL	Freeform polygon select	
Unselect		304				333	3			PUSH	Unselect	
View		1705			4041	520	3					
		1705				4	3	129		TOOL	Zoom-in	
		1706				5	3	130		TOOL	Zoom-out	
		805				6	3			PUSH	Change view	
		1702				7	3	132		TOOL	Pan map	
		previousview				548	3			PUSH	Previous view	
		nextview				549	3			PUSH	Next view	
Save View		SaveView			4053		3			PUSH	Save current map view as favourite	
Find View		FavouriteView			4041		3			PUSH	Select a favourite view	
Map Layers		LayerOptions				10	3			PUSH	Manage map layering and display	
						521	3					
Find												
Road Name		findroad		F2		521	1			PUSH	Find a particular road name	
Building Name		findbuilding		F3		521	1			PUSH	Find a particular building name	
User Defined Gazetteer		finduserdefined		F4		521	1			PUSH	Find user specified text	
Grid Reference		findgrid		F5		521	1			PUSH	Move to a specified grid reference...	
OS Address		OSAPDialog		F6		521	1			PUSH	Find a location based upon the Ordnance Survey AddressBase	
NLPG Search		chkNLPGDialog		F7		521	1			PUSH	Find a location based upon the NLPG tables	
Road Junction		FindRoadJunction		F8		521	1			PUSH	Road junction search.	
Find Selection...		306		Crtl+Shft+F		521	1			PUSH	Goto the last object found by selection	
Street View		GoogleStreetView			5001		3	138	33	TOOL	Google Street View	
Ruler		1710				11	3	138	36	PUSH	Ruler	
Legend On/Off		PMLegendBtnHandler				12	3			PUSH	Toggle ParkMap legend On/Off	

Ribbon Map
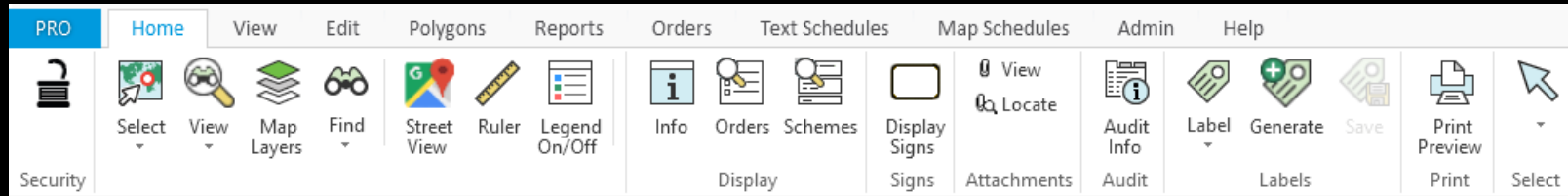
	Action	Tab	Group	Control	Menu	Caption	Module	Procedure	ID	Shortcu	BCIcon	Icon	IconSize	Cursor	DrawMode	Type	Tool tip	Hide
1																		
2									a	a	a	a	a	a	a			
3	TAB	Home																
4	GROUP	Home	Security															
5	BUTTON - BUTTON	Home	Security					Padlock			4001		3			PUSH	Toggle to update orders	
6	GROUP	Home	Main			None					524							
7	CONTROL - SPLIT	Home	Main	Select		Select		1701			524		3					
8	MENU - SPLIT	Home	Main	Select	Select	Select												
9	BUTTON - SPLIT	Home	Main	Select	Select	Select		1701			0		3	0	34	TOOL	Select an item	
10	BUTTON - SPLIT	Home	Main	Select	Select	Region Select		PM_PolygonSelect			516		3	138	34	TOOL	Select items within a region	
11	BUTTON - SPLIT	Home	Main	Select	Select	Polygon Select		PM_FreeformPolygonSelect			3		3	138	35	TOOL	Freeform polygon select	
12	BUTTON - SPLIT	Home	Main	Select	Select	Unselect		304			333		3			PUSH	Unselect	
13	CONTROL - SPLIT	Home	Main	View		View		1705		4041	520		3					
14	MENU - SPLIT	Home	Main	View	View													
15	BUTTON - SPLIT	Home	Main	View	View			1705			4		3	129		TOOL	Zoom-in	
16	BUTTON - SPLIT	Home	Main	View	View			1706			5		3	130		TOOL	Zoom-out	
17	BUTTON - SPLIT	Home	Main	View	View			805			6		3			PUSH	Change view	
18	BUTTON - SPLIT	Home	Main	View	View			1702			7		3	132		TOOL	Pan map	
19	BUTTON - SPLIT	Home	Main	View	View			previousview			548		3			PUSH	Previous view	
20	BUTTON - SPLIT	Home	Main	View	View			nextview			549		3			PUSH	Next view	
21	BUTTON - SPLIT	Home	Main	View	View	Save View		SaveView		4053			3			PUSH	Save current map view as favourite	
22	BUTTON - SPLIT	Home	Main	View	View	Find View		FavouriteView		4041			3			PUSH	Select a favourite view	
23	BUTTON - BUTTON	Home	Main			Map Layers		LayerOptions			10		3			PUSH	Manage map layering and display	
24	CONTROL - DROPDOWN	Home	Main	Find							521		3					
25	MENU - DROPDOWN	Home	Main	Find	Find	Find												
26	BUTTON - DROPDOWN	Home	Main	Find	Find	Road Name		findroad		F2	521		1			PUSH	Find a particular road name	
27	BUTTON - DROPDOWN	Home	Main	Find	Find	Building Name		findbuilding		F3	521		1			PUSH	Find a particular building name	
28	BUTTON - DROPDOWN	Home	Main	Find	Find	User Defined Gazetteer		finduserdefined		F4	521		1			PUSH	Find user specified text	
29	BUTTON - DROPDOWN	Home	Main	Find	Find	Grid Reference		findgrid		F5	521		1			PUSH	Move to a specified grid reference...	
30	BUTTON - DROPDOWN	Home	Main	Find	Find	OS Address		OSAPDialog		F6	521		1			PUSH	Find a location based upon the Ordnance Survey AddressBase	
31	BUTTON - DROPDOWN	Home	Main	Find	Find	NLPG Search		chkNLPGDialog		F7	521		1			PUSH	Find a location based upon the NLPG tables	
32	BUTTON - DROPDOWN	Home	Main	Find	Find	Road Junction		FindRoadJunction		F8	521		1			PUSH	Road junction search.	
33	BUTTON - DROPDOWN	Home	Main	Find	Find	Find Selection...		306		Crtl+Shft+F	521		1			PUSH	Goto the last object found by selection	
34	SEPARATOR	Home	Main															
35	BUTTON - BUTTON	Home	Main			Street View		GoogleStreetView			5001		3	138	33	TOOL	Google Street View	
36	BUTTON - BUTTON	Home	Main			Ruler		1710			11		3	138	36	PUSH	Ruler	
37	BUTTON - BUTTON	Home	Main			Legend On/Off		PMLegendBtnHandler			12		3			PUSH	Toggle ParkMap legend On/Off	

LEGEND WINDOW

The Future

- Feedback has been very positive from users
- Use our Design and Development approach to transform our other MapInfo products
- Move our code from MapBasic to C#
- Update our reporting tools

Special Thanks

- Peter Horsbøll Møller
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