Freescale Semiconductor
Application Note

Document Number: AN4727

Porting a Classic CodeWarrior Project into CodeWarrior for Microcontrollers v10.4

1. Introduction

This application note describes the proper steps to manually port a legacy CodeWarrior project developed using a classic CodeWarrior product into the current Eclipse-based CodeWarrior for Microcontroller v10.4. Information on how to find and use alternative library in terms of the MSL/EWL libraries for Power Architecture processor and the limitation on asymmetrical multi-core projects support on Power Architecture processor is available in the Appendix.

NOTE:	The Eclipse-based CodeWarrior for Microcontrollers v10.4 does not offer a porting mechanism to allow you to automatically convert a legacy projects that developed from classic CodeWarrior products such as CodeWarrior for Microcontrollers v6.3, CodeWarrior for ColdFire v7.2, CodeWarrior for DSP568xx v8.3, and CodeWarrior for EPPC v2.10 plus any previous release of the above listed classic CodeWarrior products into the new Eclipse-based CodeWarrior for Microcontroller v10.4 tools chain.

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2. Porting Projects Manually

To port a legacy project developed from classic CodeWarrior products into the Eclipse-based CodeWarrior for Microcontrollers v10.4, perform the following steps.

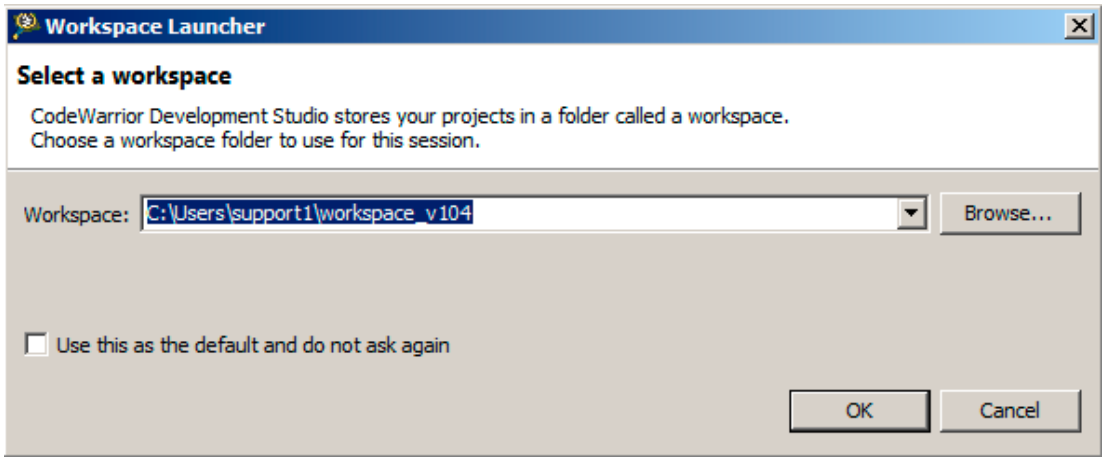
1. Create a New Project in the Eclipse IDE -- CodeWarrior for Microcontrollers v10.4
2. Update Source Files and and Linker File
3. Update Paths
4. Update Compiler /Assembler / Linker Options
5. Update User Libraries / Runtime Libraries if Needed
6. Rebuild the Project Created in CodeWarrior for Microcontrollers v10.4

2.1. Create a New Project in the Eclipse IDE

1. Start CodeWarrior for Microcontrollers v10.4.
   a) Select **Start > Programs > Freescale CodeWarrior > CW for MCU v10.4 > CodeWarrior IDE.**

      The **Workspace Launcher** dialog box appears.

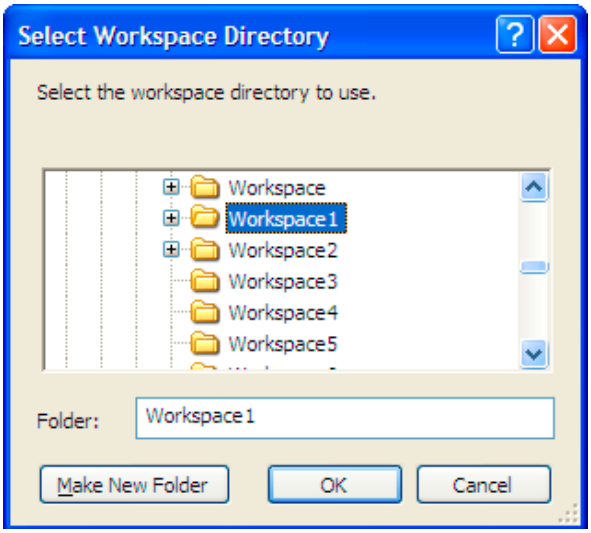
Figure 1: Workspace Launcher Dialog Box



   b) Click **OK** button to accept the default workspace. To use a different workspace click **Browse** button.

      The **Select Workspace Directory** dialog box appears.

Figure 2: Select Workspace Directory Dialog Box



c) Select the required folder or click the **Make New Folder** button to create a new folder for storing the newly created project.

d) Click **OK** button.
The **Select Workspace Directory** dialog box closes.

2. Check the parameters and properties of the target processor on which the project will be executed. You will need to know the exact details of the following parameters:

   - target processor type and designation
   - programming language used in the legacy project (C/C++, assembler)
   - type of floating point support
   - connection type / debug interface used in the legacy project
   - memory model being used in the legacy project
   - for Power Architecture processors – the present mode of the target processor (Lock Step Mode/Decoupled Parallel Mode) and the used instruction set

NOTE	It is necessary to use the same settings/properties for creating a new project in the CodeWarrior for Microcontrollers v10.4 version of product to keep the functionality of the new project like the legacy project.

3. Create a new project by using the **New Project** wizard integrated in the CodeWarrior for Microcontrollers v10.4 product and select the same parameters/properties for the new one. The wizard creates a new project according to your specifications. You can access the project from the **CodeWarrior Projects** view in the opened **Workbench** window.

NOTE: "Quick Start for Microcontrollers.PDF" provides the detailed description on how to create a new project by the New Project wizard tool. This PDF document could be found under CodeWarrior for Microcontrollers v10.4 installation \MCU\.

2.2. Update Source and Linker Files

When you port a legacy project some legacy files are also imported to the new project. You need to update/clean all such legacy files and delete any unused files from the target project.

To update such source files, perform these steps:

1. Open the "main.c" source file to see the main function. If assembly language is used then open "main.asm" file. Check the header file of the target microcontroller project, linker file, and start up code of the new target project and decide whether they can be used directly or is it necessary to use the ones from the legacy project.

2. Add all of the required files from the legacy project into the new project. Select the target directory of the project you want to add the file to and from the pop-up menu select **Add file.**

3. Repeat step 2 for all the source files you want to add to the target project.

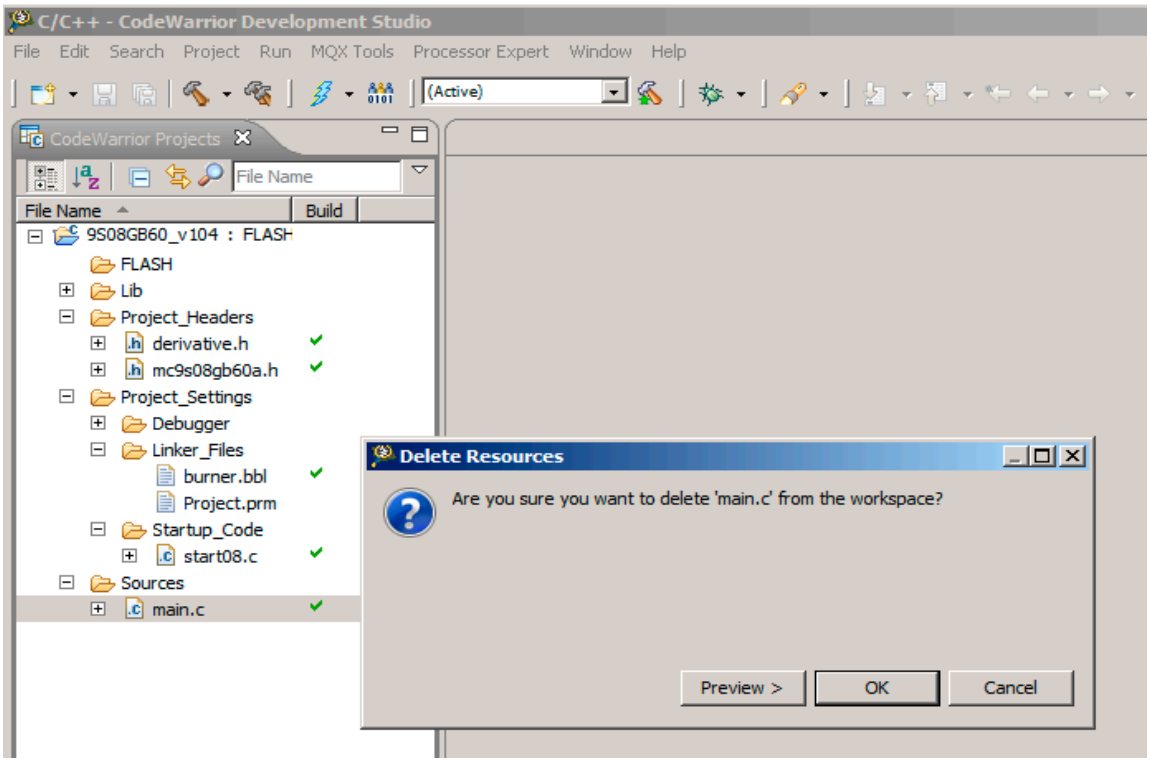
TIP: It is also possible to use **Windows Explorer** application to add the files. You can open the **Windows Explorer** application to drag and drop all the ASM/C/C++ source files, header files, linker file, etc. into the target project. However, please DO update paths manually per Section 2.3 Update Paths because Eclipsed based IDE could NOT update path automatically as classic CodeWarrior IDE does using drag & drop mechanism via Windows Explorer.

4. Delete all the unused files from the target project, if needed. The used source files and sources of the new project created in CodeWarrior for Microcontrollers v10.4 version should match to the ones in your legacy project.

NOTE: To delete a file from project opened in CodeWarrior for Microcontrollers v10.4 IDE, right-click the file name and select Delete item from the pop-up menu, Click OK button to confirm the action. Refer to Figure 3 – Delete Resources from the project.

5. Check the current linker file -- *.prm file for HCS08 / RS08, *.lcf file for MCF / EPPC, and *.cmd for DSC of the newly created project, update this file if it does not match the one that being used in the legacy project.

Figure 3 – Delete Resources from the Project



2.3. Update Paths

NOTE: In case any build error occur, during the porting process, due to missing header files / source files / customer build library / paths perform the following steps to update them properly.

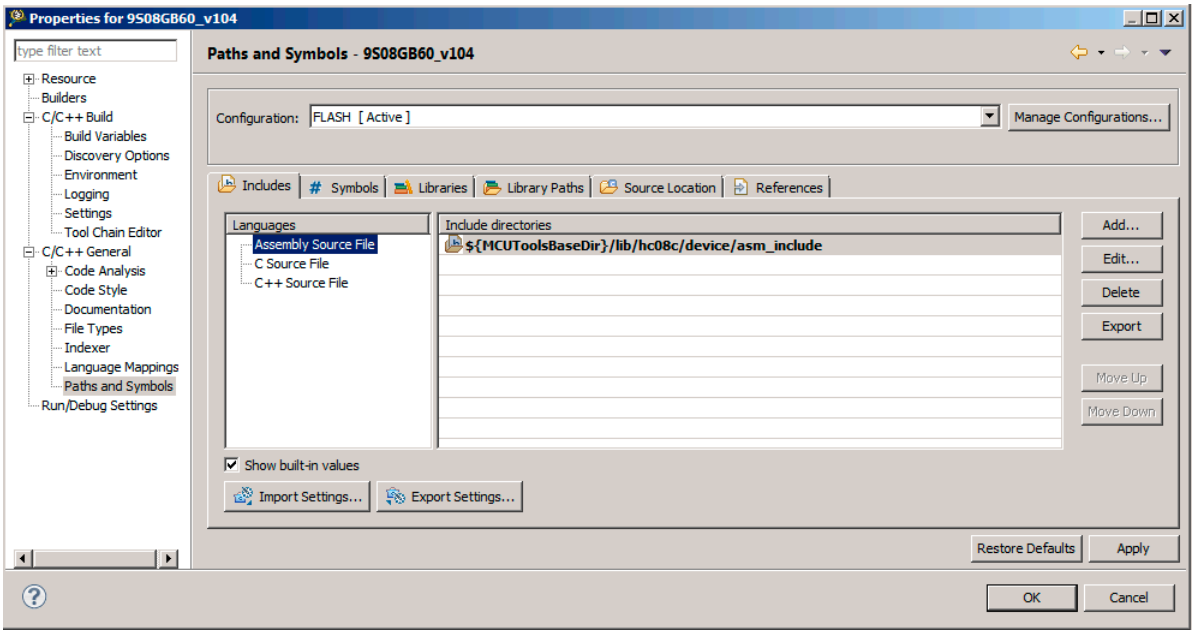
1. Update paths to external files used by the target project.

2. Right-click the target project and select **Properties** item from the pop-up menu. The **Properties** window appears. Refer to Figure 4 – Properties Window for Paths and Symbols setting of the Project.

3. Expand **C/C++ General > Paths and Symbols**.

4. Add new paths for the source code (.c, .cc, .cxx, .cpp types), header (.h type), and objects (.o type) files in the **Includes** section.

Figure 4 - Properties Window for Paths and Symbols Setting of the Project



TIP:	Click **Add…** button to add the correct path information into the **Directory** name text box of the target project.

NOTE:	For application that has user library being implemented, add new paths for user library (.a type) files in the Libraries section.

2.4. Update Compiler / Assembler / Linker Options

It is necessary to update the required compiler, assembler, and linker settings of the new project created in CodeWarrior for Microcontrollers v10.4 product.

1. Open the legacy project in classic CodeWarrior IDE and note all the compiler, assembler and linker options that have been used for the legacy project.

2. Right-click on the target project opened in CodeWarrior for Microcontrollers v10.4 IDE and select **Properties** from the pop-up or context menu.

   The **Properties** window for the selected project appears. Refer to Figure – 5, 6, 7, 8 for Properties Window Setting of a Project targeting various MCU.

3. Expand **C/C++ Build** > **Settings** and select **Tool Settings**.

Figure 5 - Properties Window Settings of an EPPC Project

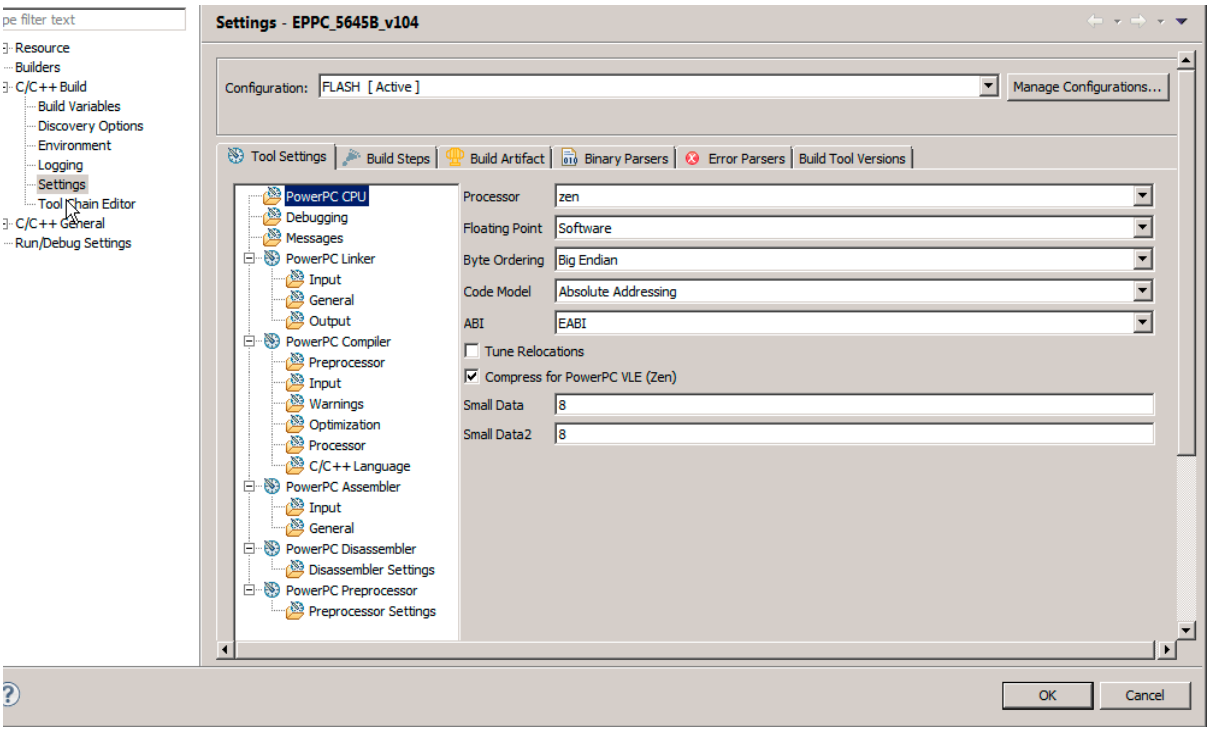


Figure 6 - Properties Window Settings of a HCS08 Project

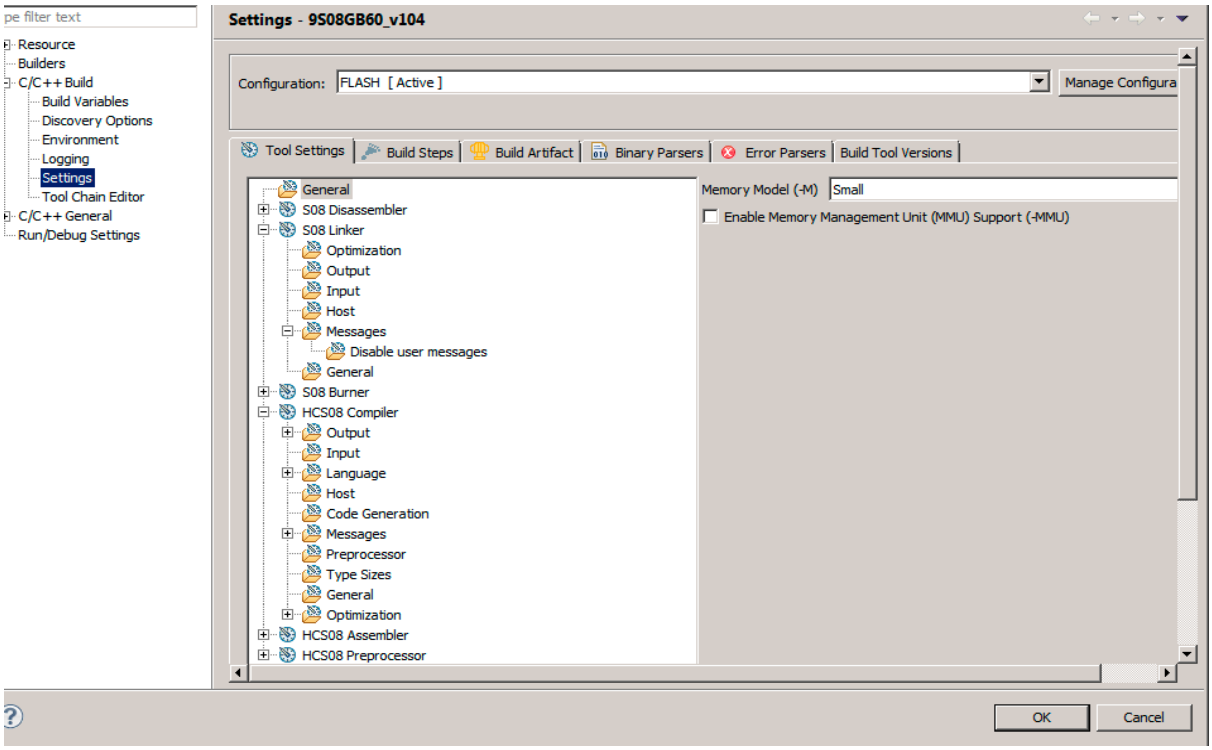


Figure 7 - Properties Window Settings of a DSC Project

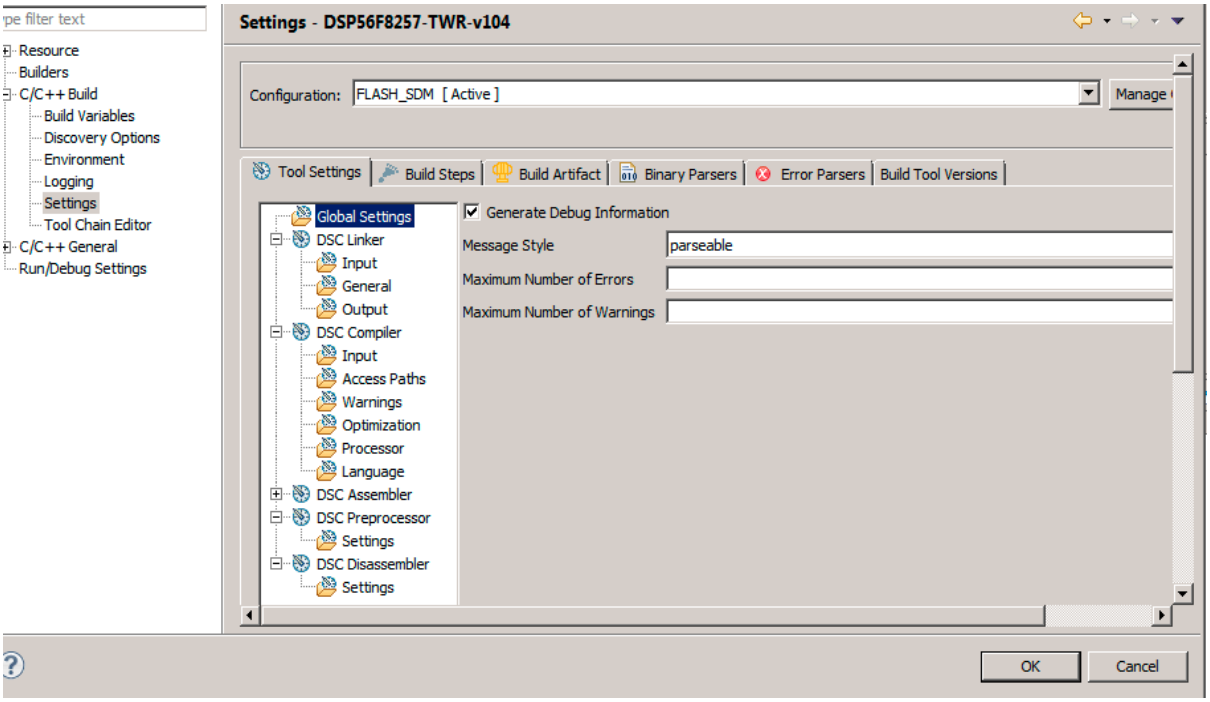
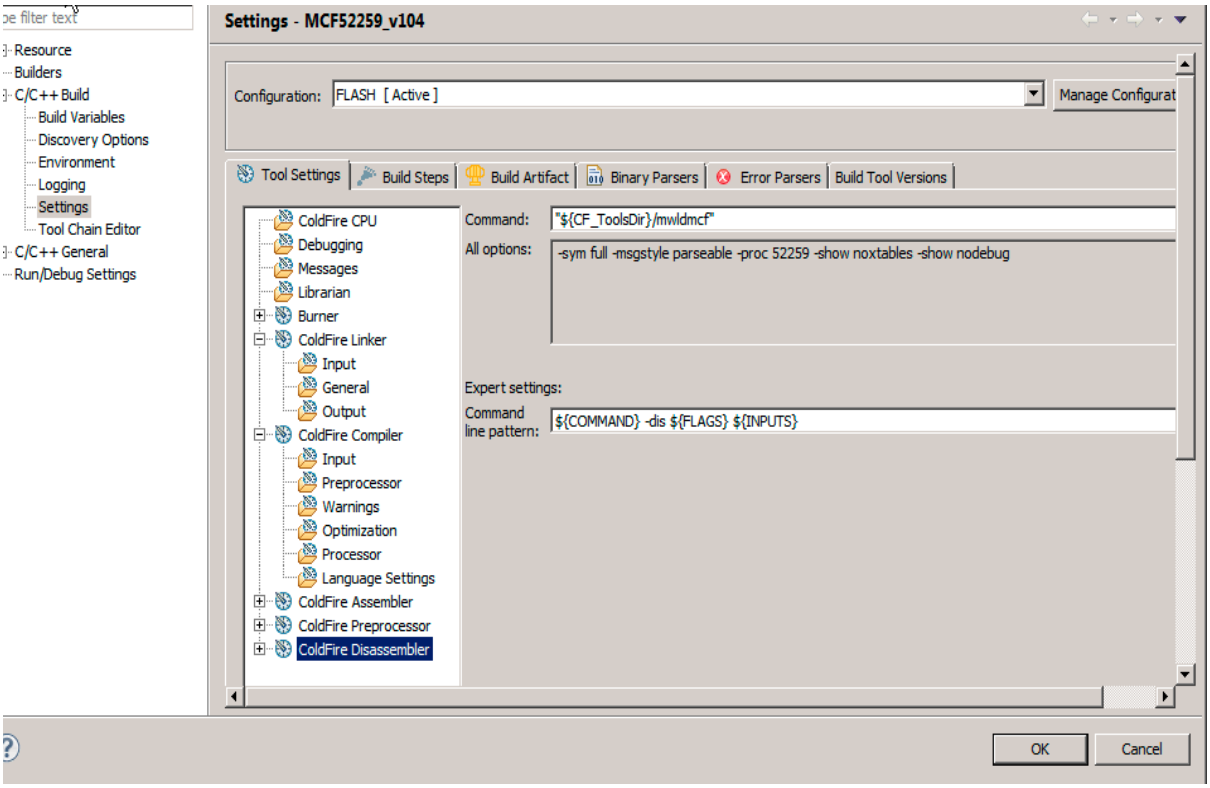


Figure 8 - Properties Window Settings of a MCF Project



4. Set the required Compiler / Assembler / Linker options as specified in the legacy project.

NOTE: There is separate prefix file in CodeWarrior for Microcontrollers v10.4 product. It is necessary to copy prefix text box from the legacy CodeWarrior project and paste it into an Eclipse prefix file for your target MCU during migration process.

2.5. Update User Libraries / Runtime Libraries if Needed

If user libraries have been implemented in legacy CodeWarrior project, it's required to rebuild the user libraries in CodeWarrior for Microcontrollers v10.4 and link it into the new Eclipse-based project created in step 2.1.

NOTE: For Power Architecture processor, the MSL libraries are used in classic CodeWarrior product, while in Eclipse based CodeWarrior for Microcontrollers v10.4, it's being replaced as EWL libraries. `Refer to Table 1` in Appendix to find the translation between MSL and EWL libraries.

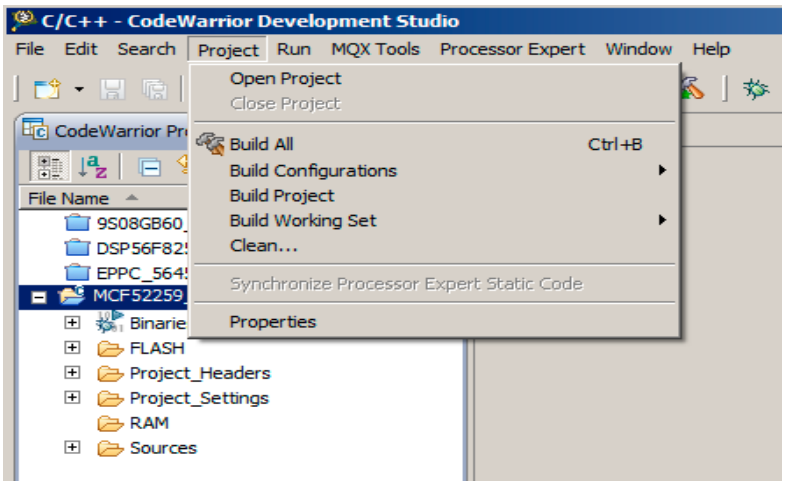
TIP: Refer to `AN4678 Application Note` for more information on how to find equivalent of used runtime libraries in the target project.

2.6. Rebuild the Project Created in CodeWarrior for MCU v10.4

Expand **Project** > **Build Project** item from the drop-down menu or click the quick access icon **Build** on IDE Toolbar.

NOTE: If there are any changes has been made to the source files of the target project, it's always better to clean the project before re-building it. To clean a project, right-click on the project and select **Clean… from** IDE Project drop-down menu. Refer to `Figure 9 -Clean the Project`.

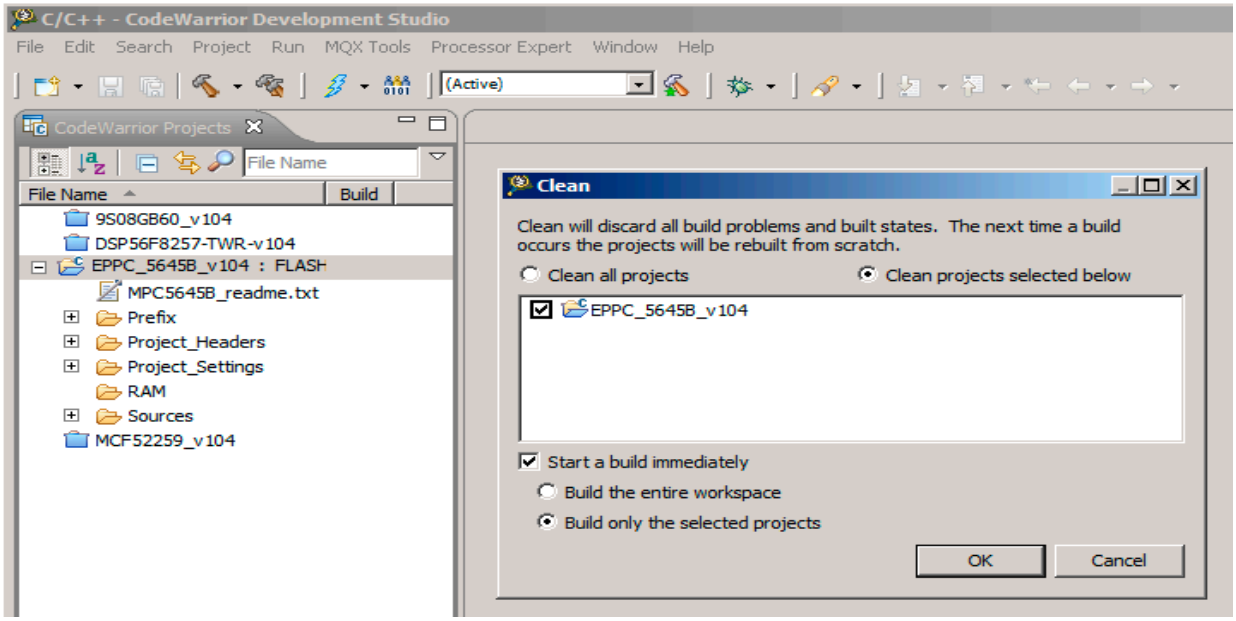
Figure 9 – Clean the Project



TIP: The CodeWarrior IDE Classic tool could allow you to have multiple projects open without any performance lost. However, due to Eclipse IDE consistent caching, it is better to close all unused projects in the **CodeWarrior Projects** view window to avoid severe slow down.

The following figure lists three unused projects – 9S08GB60_v104 / DSP56F8257-TWR-v104/MCF52259_v104 in CLOSED state while only EPPC_5645B_v104 is rebuilding via Project\Clean... avenue.

Figure 10 – Rebuild only the selected projects via Project\ Clean… avenue



3. Appendix – Power Architecture processor

Table 1. The equivalent file names between EWL and MSL libraries for Power Architecture processors

MSL Suffix Name Equivalent:	EWL Library Core and Flag Name:
PPCEABI.VS.UC	E200z0_VLE_Soft
PPCEABI.VS.UC	E200z150_VLE_Soft
PPCEABI.V.UC	E200z335_VLE
PPCEABI.V.SP.UC	E200z335_VLE_SPFP_Only
PPCEABI.V.UC	E200z336_VLE
PPCEABI.V.SP.UC	E200z336_VLE_SPFP_Only
PPCEABI.V.UC	E200z446_VLE
PPCEABI.V.SP.UC	E200z446_VLE_SPFP_Only
PPCEABI.V.UC	E200z448_VLE
PPCEABI.V.SP.UC	E200z448_VLE_SPFP_Only
PPCEABI.E.UC	E200z650
PPCEABI.E.SP.UC	E200z650_SPFP_Only
PPCEABI.V.UC	E200z650_VLE
PPCEABI.V.SP.UC	E200z650_VLE_SPFP_Only
PPCEABI.E.UC	E200z652
PPCEABI.E.SP.UC	E200z652_SPFP_Only
PPCEABI.V.UC	E200z652_VLE
PPCEABI.V.SP.UC	E200z652_VLE_SPFP_Only
PPCEABI.V.UC	E200z750_VLE
PPCEABI.V.SP.UC	E200z750_VLE_SPFP_Only
PPCEABI.V.UC	E200z760_VLE
PPCEABI.V.SP.UC	E200z760_VLE_SPFP_Only

NOTE: The CodeWarrior for EPPC v2.10 tool supports asymmetrical multi-core projects – example like e200z0 core + e200z4 core. However, the current CodeWarrior for Microcontrollers v10.4 supports symmetrical multi-core projects ONLY, i.e., the multi-core has to be the same one, either e200z0 core or e200z4 core, but could not be a mix up like classic CodeWarrior for EPPC v2.10 does. Next release CodeWarrior for Microcontrollers v10.5 will have asymmetrical multi-core support added on EPPC.

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