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Project Risk Manager  
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Software Operating Manual  
(Version 1.2.1)

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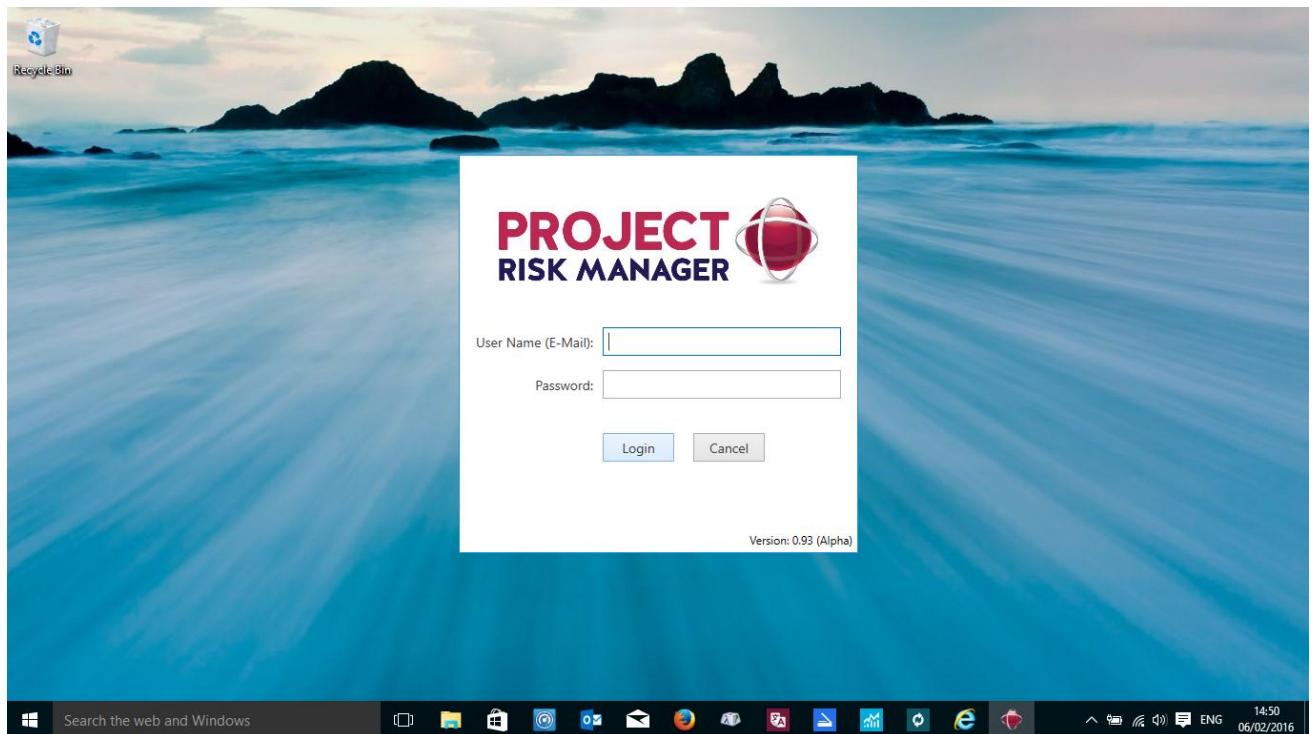
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## 1 Introduction

This document provides instructions and guidelines for users to set up and operate Project Risk Manager software application version 1.2.



Screen Shot 1 – Login Screen

## 2 Software Installation

This application is provided as a software service, whereby the user is required to login to a cloud hosted server in order to gain access to their project data. However, the application may also be run offline, allowing users to add, update and delete data on their local devices, which will then be synchronised with the server when back online.

Subscribers will automatically be granted with System Administrator access rights, meaning they will be able to set up the system resource codes, assign other users and access all other security levels of the application.

**Note:** If running our free version, users will have full access to all the software functions and features with the exception of:

- i. Access to the Public Risk Directory
- ii. Exporting data
- iii. Assigning more than 5 active users

**To install the software and activate your account, please follow these 7 simple steps:**

## 2.1 Installation Steps

1. Download/Install and run the application setup file (PRMSetup.exe).
2. Once the PRM setup file has installed the application, run the application.
3. At the login screen, click on the “Register” link, located below the User Name field.



4. The “Register” link will open the Project Risk Manager account management portal through your default web browser. Select which plan you would like to subscribe to (“Free” or “Pro”), complete the registration form and click on the “Register” button. This will send an account activation link to your registered email address.
5. Go to your email inbox and click on the activation link provided in the message sent from the account management portal.

6. The activation link will re-open the Project Risk Manager account management portal, where you will need to set your password in the required fields and click on the “Save & Login” button. If you have subscribed to the “Free” plan, your account will be activated after confirming your password and you will be re-directed to the account management portal home page. If you have subscribed to the “Pro” plan, you will be re-directed to the account management portal subscription page. Once you have selected your “Pro” plan options and entered your payment details, your account will be activated and you will be re-directed to the account management portal home page.
7. Return to the application login screen, enter your user name (which is the email address you used to register your account) and password, and click on the “Login” button.

## **2.2 First-Time Login**

When running the application for the first time, users will need to be on-line in order for the system to access their account credentials and allow them to log in. If a user is off-line the first time they run the application, they will not be able to log in, as their account credentials are only saved onto their local devices after the initial synchronisation process with the cloud server has been completed.

## **2.3 User Accounts**

Users of the application may either be subscribers or assigned users. Subscribers are users who have registered for the software service, and are automatically assigned as System Administrators. Assigned users are people who have been added to the application’s contact database, and are able to log in and use the application within the limitations of the access rights granted to them.

All users, whether they are subscribers or assigned users, may access their account details via the “Manage my account” link, located within their user profile menu, which can be found in top-right corner of the application screen after they have logged in.

The application allows users to be registered on multiple domains with the same user name (i.e. A person may be assigned as a user on multiple subscriptions and retain their unique login username for all subscriptions). In such instances, when the user logs in, they will be presented with a list all the domains that they are registered on. The user then needs to select which domain they wish to log into for that session.

## 3 System Setup

The application comprises several global system parameters and values, located under the “PROJECTS” menu, which will be applied to all projects. These are: Resource Codes, Risk Ranking Rules and Definitions, Risk Manageability Rules and Definitions. The Risk Ranking Rules and Definitions, and Risk Manageability Rules and Definitions are hard-coded by the application and may be viewed, but not edited, by all users. Resource Codes are configurable and should be set up by the System Administrator prior to creating any new projects.

### 3.1 Resource Codes

All resource codes are defined and stored under the “Maintain Resources” tab. There are eight pre-defined resource categories wherein the resource codes reside and which are used by the application. These are: Phases, Facilities, Departments, Job Titles, Currencies, Risk Bearers, Industry Sector and Project Type.

The System Administrator will be able to add, edit or delete as many of the values under each resource category as required, but the application has default values, pre-loaded for each category as follows:

a. Phases:

- i. All
- ii. Concept/Feasibility
- iii. FEED
- iv. Detailed Design
- v. Procurement
- vi. Construction
- vii. Transport & Installation
- viii. Hook-up & Completions
- ix. Commissioning
- x. Operations

b. Facilities:

- i. All
- ii. Accommodation
- iii. Administration
- iv. Central Processing Plant
- v. Medical
- vi. Flowlines & Pipelines
- vii. FPSO
- viii. Security & Fire Fighting
- ix. Storage & Warehousing
- x. Wellhead Platforms

c. Departments:

- i. All
- ii. Commissioning
- iii. Construction
- iv. Contracts
- v. Drilling
- vi. Engineering
- vii. Hook-up & Completions
- viii. HSSE
- ix. Legal
- x. Logistics

- xi. Management
- xii. Operations
- xiii. Procurement
- xiv. Quality Assurance
- xv. Regulatory Compliance
- xvi. Sub-Surface
- xvii. Transport & Installation
  
- d. Job Titles:
  - i. CEO
  - ii. CFO
  - iii. COO
  - iv. Consultant
  - v. Managing Director
  - vi. Projects Director
  - vii. Finance Director
  - viii. Operations Director
  - ix. HSSE Director
  - x. Group Manager
  - xi. Country Manager
  - xii. General Manager
  - xiii. Project Manager
  - xiv. Delivery Manager
  - xv. Engineering Manager
  - xvi. Finance Manager
  - xvii. Operations Manager
  - xviii. HSSE Manager
  - xix. Risk Manager
  - xx. Logistics Manager
  - xxi. Commissioning Manager
  - xxii. Project Engineer
  - xxiii. Lead Engineer
  - xxiv. Discipline Engineer
  - xxv. Commissioning Engineer

- e. Currencies:
  - i. GBP
  - ii. EUR
  - iii. USD
  - iv. AED
  - v. ARS
  - vi. AUD
  - vii. BRL
  - viii. CHF
  - ix. CNY
  - x. DKK
  - xi. INR
  - xii. JPY
  - xiii. NOK
  - xiv. RUB
  - xv. SEK
  - xvi. SGD

f. Risk Bearers:

- i. Internal
- ii. Client
- iii. Contractor
- iv. Other Stakeholder

g. Industry Sector:

- i. Aerospace
- ii. Automotive
- iii. Banking & Finance
- iv. Building & Infrastructure
- v. Defence
- vi. Education & Training
- vii. Engineering & Construction
- viii. Entertainment & Media
- ix. Healthcare
- x. Industrial Manufacturing
- xi. Information Technology
- xii. Insurance
- xiii. Mineral & Chemical Processing
- xiv. Mining
- xv. Oil & Gas
- xvi. Paper & Packaging
- xvii. Pharmaceutical
- xviii. Power & Energy
- xix. Research & Technology
- xx. Retail & Consumer
- xxi. Telecommunications
- xxii. Transportation & Logistics
- xxiii. Travel & Leisure
- xxiv. Water & Waste

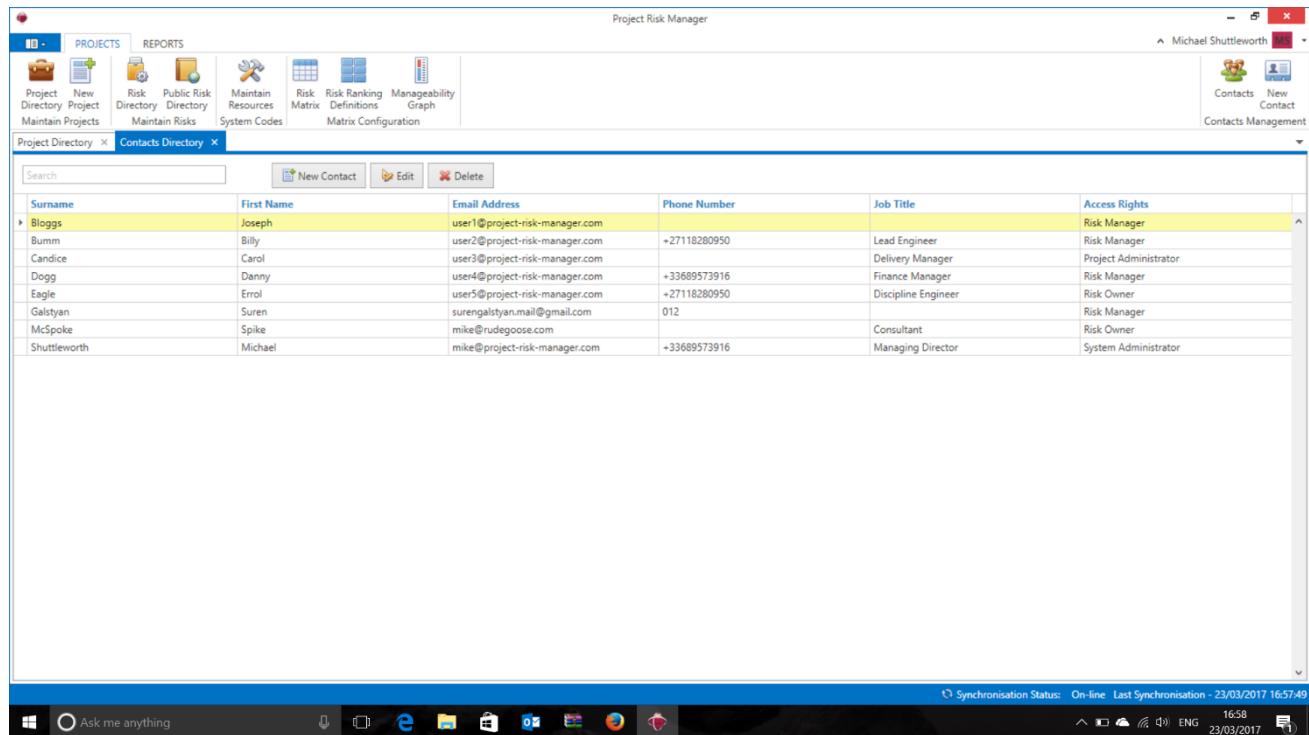
h. Project Type:

- i. Onshore - Green Field
- ii. Offshore - Green Field
- iii. Onshore - Brown Field
- iv. Offshore - Brown Field

All of the above pre-loaded values may be revised by the System Administrator as necessary to suit the types of business and projects being managed by the application users.

## 3.2 Contacts

Contacts may be added or edited by all users with Risk Manager or higher access rights. However, only users with System or Project Administrator access rights may delete contacts (subject to clearing their assignment on all projects and risks first – See 3.2.1 below). The full range of functionality permitted by each user access level is defined in section [4.1 User Access](#).



The screenshot shows the Project Risk Manager application window. The top menu bar includes 'PROJECTS' (selected), 'REPORTS', and various risk management tools like 'Risk Matrix', 'Risk Ranking', and 'Manageability Graph'. The main content area is titled 'Project Directory' and displays a 'Contacts Directory'. A table lists contacts with columns for Surname, First Name, Email Address, Phone Number, Job Title, and Access Rights. The contacts listed are:

Surname	First Name	Email Address	Phone Number	Job Title	Access Rights
Bloggs	Joseph	user1@project-risk-manager.com	+27118280950	Lead Engineer	Risk Manager
Bumm	Billy	user2@project-risk-manager.com		Delivery Manager	Risk Manager
Candice	Carol	user3@project-risk-manager.com		Finance Manager	Project Administrator
Dogg	Danny	user4@project-risk-manager.com	+33689573916	Discipline Engineer	Risk Manager
Eagle	Errol	user5@project-risk-manager.com	+27118280950	Consultant	Risk Owner
Galstyan	Suren	surengalstyan.mail@gmail.com	012	Managing Director	Risk Manager
McSpoke	Spike	mike@rudegoose.com			Risk Owner
Shuttleworth	Michael	mike@project-risk-manager.com	+33689573916		System Administrator

The status bar at the bottom indicates 'Synchronisation Status: On-line' and 'Last Synchronisation - 23/03/2017 16:57:49'.

**Screen Shot 2 – Contacts Directory**

As the access rights granted to Project Administrators and Risk Managers do not allow for the creating or editing of job titles, the System Administrator needs to ensure that all applicable job titles given to new contacts are pre-loaded into the application under the “Maintain Resources” tab. Any additions, changes or deletions to the system-wide resource codes, like Job Titles, may only be made by the System Administrator through the “Maintain Resources” menu.

### 3.2.1 Deleting Contacts

Contacts may only be deleted if they are not assigned as Project Manager, Risk Manager or Risk Owner on any project, or if all risks associated with them are closed. If a contact needs to be deleted, please ensure that all projects or risks against which they have been assigned are either closed, deleted or re-assigned to other users before deleting the contact.

### 3.3 System Rules & Definitions

The application contains a number of rules and definitions which are used to quantify the risk ranking and risk manageability levels derived by the software. These rules and definitions are hard-coded into the application and are not editable. They may, however, be viewed under the “Matrix Configuration” tab.

There are also a number of rules and definitions which are editable, as they may vary from one project to the next. These are the rules and definitions which define risk probability ranking ranges, risk impact ranking ranges and risk occurrence timescales. Although the application comes with pre-loaded rules and definitions for these ranges, it is recommended that these are checked and verified as being applicable to your business and projects before creating and managing risks for each new project.

## 4 User Access & Security

### 4.1 User Access

The application has five levels of user access which are as follows:

- 1) System Administrator – These would typically be either the Business Owner, Corporate Risk Manager or Projects Director, but anyone assigned with System Administrator access rights is able to:
  - a. Configure system resource codes (being: Phases, Facilities, Departments, Job Titles, Currencies, Risk Bearers, Industry Sector and Project Type) for all projects
  - b. Add, edit or delete other users with access rights at any level
  - c. Restore backup data
  - d. Access all lower security levels
- 2) Project Administrator - These would typically be Project Managers or other senior managers who have the responsibility to oversee and control activities on multiple projects. Anyone assigned with Project Administrator rights is able to:
  - a. Create, edit or delete all projects
  - b. Add, edit or delete other users with Risk Manager or lower access rights
  - c. Assign other contacts with Risk Manager or lower access rights
  - d. Configure risk probability, impact and occurrence timeline ranges on all projects
  - e. Add, edit or delete risks on all projects
  - f. Mark risks on all projects as “Private”
  - g. Copy risks from one project to another
  - h. Access all lower security levels
- 3) Risk Manager – These are users who have been assigned responsibility to manage, oversee and approve the adding of new risks on projects which have been assigned to them. Risk Managers are able to:
  - a. Edit project details only on projects assigned to them, but may not delete these projects
  - b. Add and edit other users with Risk Owner or lower access rights only on projects assigned to them
  - c. Assign any contacts as risk owners only on projects assigned to them
  - d. Configure risk probability, impact and occurrence timeline ranges only on projects assigned to them
  - e. Add, edit or delete risks only on projects assigned to them

- f. Mark risks as “Private” only on projects assigned to them
  - g. Copy and edit risks from all other projects only to projects assigned to them
  - h. Approve, edit or reject new risks submitted by Risk Owners only on projects assigned to them
  - i. Manually close out risks only on projects assigned to them
  - j. Access all lower security levels
- 4) Risk Owner - These are users who have been assigned responsibility to manage specific risks on specific projects. Risk Owners are able to:
- a. View and run reports on all projects
  - b. Copy and edit risks from all other projects only to projects where they are assigned as Risk Owners, and submit them for approval
  - c. Add and submit new risks for approval only on projects where they are assigned as Risk Owners
  - d. Add, edit or delete mitigations only on risks where they are the assigned Risk Owners
  - e. Manually close out risks only on risks where they are the assigned Risk Owners
- 5) Guest – These are users who are able to view and run reports on all projects and risk registers for information purposes only. Guests are not able to add, edit, copy or delete any data in the application.

#### **4.1.1 Assigning Project Managers, Risk Managers and Risk Owners**

An important feature of the software is the automatic upgrading of user access rights when any contact is assigned as a Project Manager, Risk Manager or Risk Owner on any project.

If a contact is initially given “Guest” access rights, and is later assigned as a risk owner on any project, their access rights will automatically be upgraded to “Risk Owner” for the projects that they have been assigned to.

Similarly, if a Guest or Risk Owner is subsequently assigned as either a Project Manager or Risk Manager on any project, their access rights will automatically be upgraded to “Risk Manager” for the projects that they have been assigned to.

Removing a user as Project Manager, Risk Manager or Risk Owner however, does not automatically downgrade their access rights. If you wish to downgrade a user’s access rights, this can be done within the Contacts Management tab, but only if they are no longer assigned as Project Manager, Risk Manager or Risk Owner on any project, or if they no longer have any open risks associated with them. If a user is assigned as either a Project Manager or Risk Manager, their minimum access rights will be “Risk Manager”. If a user is assigned as a Risk Owner, their minimum access rights will be “Risk Owner”.

## 4.2 User Security

User security is controlled through a username and password system. All data is stored in an encrypted and secure database on the host server. Once a subscription service has been activated, a new domain is created on the server to store the subscriber's project and user data. The new subscriber, having automatic System Administrator access rights, will be able to add new users and grant them appropriate access rights, through the "Contacts Management" tab.

Every time a new user is created they will automatically be assigned a username, which will be the same as their email address. Each new user will be notified of their assignment by email, with a link to activate their account and download the application (if they have not done so already). During activation, each new user will be required to set a personal password to allow them to login to the application.

In the event of forgetting their password, users may request their password to be reset by clicking on the "Forgot Password?" link in either their account management portal or the application the login screen.

### 4.2.1 Switching Users and Domains

Different users may access their projects from within the same application by clicking on the "Switch User" button within the user's profile menu, which is located in top-right corner of the application screen. This will return the user to the application login screen, from where a new user can enter their details and log into their own projects.

If users are registered on multiple domains, they can also switch between their domains by clicking on the "Switch User" button. If the same user has been registered on multiple domains with the same user-name then, after the user logs in, a domain list will appear allowing the user to select which domain they want to access.

## 4.3 Data Management

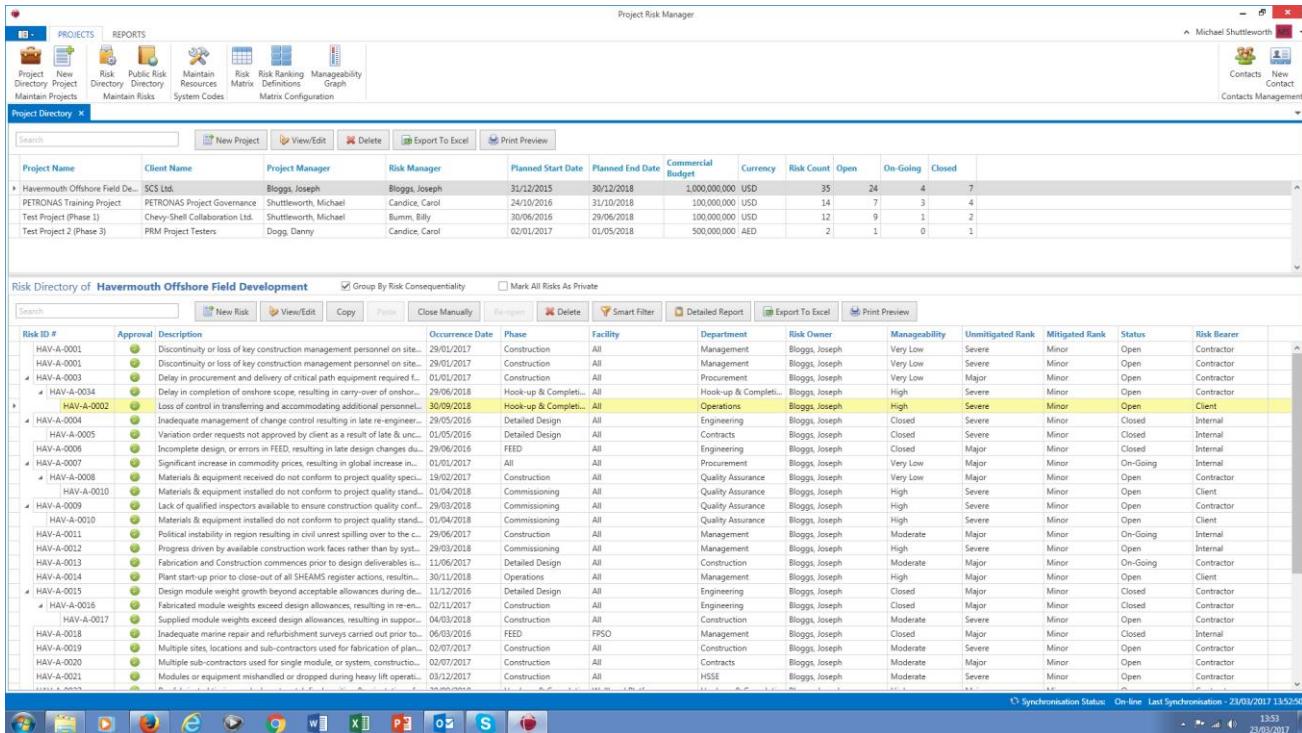
As the application allows for users to add, edit and delete data while either online or offline, the system applies a data management logic which will save the latest information entered while offline to the server when back online. In the event of two users working on the same risk while offline, the system will synchronise the latest entered data with the server, overwriting any earlier field entries, as soon as the users are back online again. For example: If Users A and B are both working offline, User A updates a risk and User B then updates the same risk data one minute later, the data entered by User A will be overwritten in the server by User B's data, even if User A goes back online sometime after User B.

All data is backed up on the server multiple times every day so, if any critical data needs to be restored from an earlier time, this can be done by the System Administrator sending a restore request to the application support team at: [support@project-risk-manager.com](mailto:support@project-risk-manager.com). Note, however, that any data entered online between the time of the data restore request and the time when the restore operation is carried out will be lost. It is therefore important to ensure that any data updates made during this period are done offline. Once the back-up data has been restored, users can go back online to synchronise their updates which were made offline after the data restore request was submitted.

## 5 Projects

### 5.1 Project Search, Add, Edit & Delete

Users may search for specific project details contained in any one of the project grid columns by typing the numeric or text string they are searching for into the “Search” form located at the top of the Projects Directory list.



Screen Shot 3 – Project Directory

To add a new project, users with Project Administrator access rights or higher may either select the “New Project” icon in the “Maintain Projects” ribbon menu, or select the “New Project” button in the project grid menu bar.

To edit an existing project, users with Risk Manager access rights or higher may either select the “View/Edit” button in the project grid menu bar, or double click on the selected project from the Project Directory list.

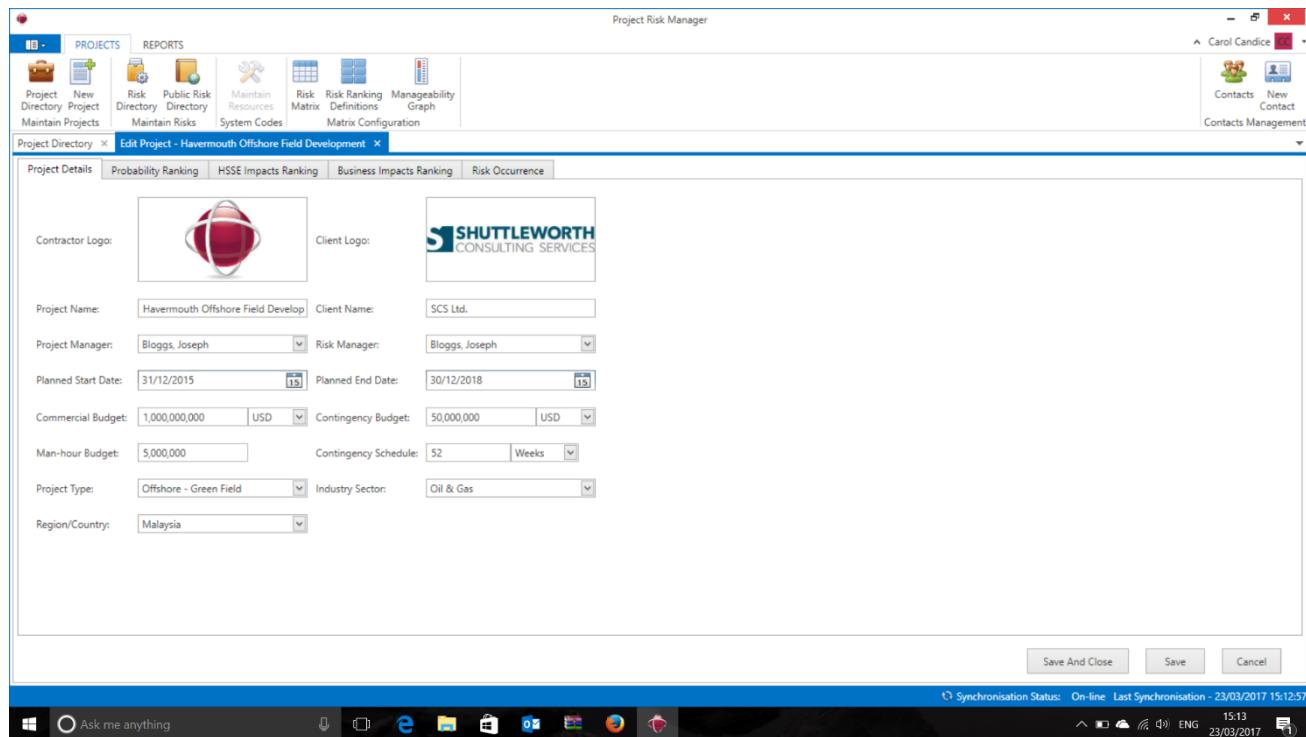
To delete an existing project, users with Project Administrator access rights or higher may select the “Delete” button in the project grid menu bar.

When choosing to delete a project, the user will be given an appropriate warning asking if they are sure they want to delete the selected project. Once deleted, the affected project data will no longer be available to users and may only be recovered through the System Administrator performing a data restore.

#### 5.1.1 Project Details

Basic project details to be entered by the user are: Project Name, Client Name, Project Manager, Risk Manager, Planned Start Date, Planned End Date, Commercial Budget, Contingency Budget, Contingency Schedule, Man-Hour Budget, Project Type, Industry Sector and Region/Country.

Contractor and Client logo graphic files may also be uploaded into the Project Details form. These logos are used by the application as style headers when running reports.



**Screen Shot 4 – Project Details**

The following form fields are mandatory fields used by the application, and must therefore be completed in order to save a project:

- ❖ Project Name
- ❖ Project Manager
- ❖ Risk Manager
- ❖ Commercial Budget
- ❖ Currency

#### **5.1.1.1 Maximum Cost & Schedule Exposure**

Due to the wide variance in project budgets and schedules, and what may be considered acceptable risk impact ranges for these two categories, the Maximum Cost Exposure and Maximum Schedule Exposure fields are provided for use as an alternative to using actual project commercial budget and baseline schedule values to rank the cost and schedule impacts.

#### **5.1.2 Project Risk Configuration**

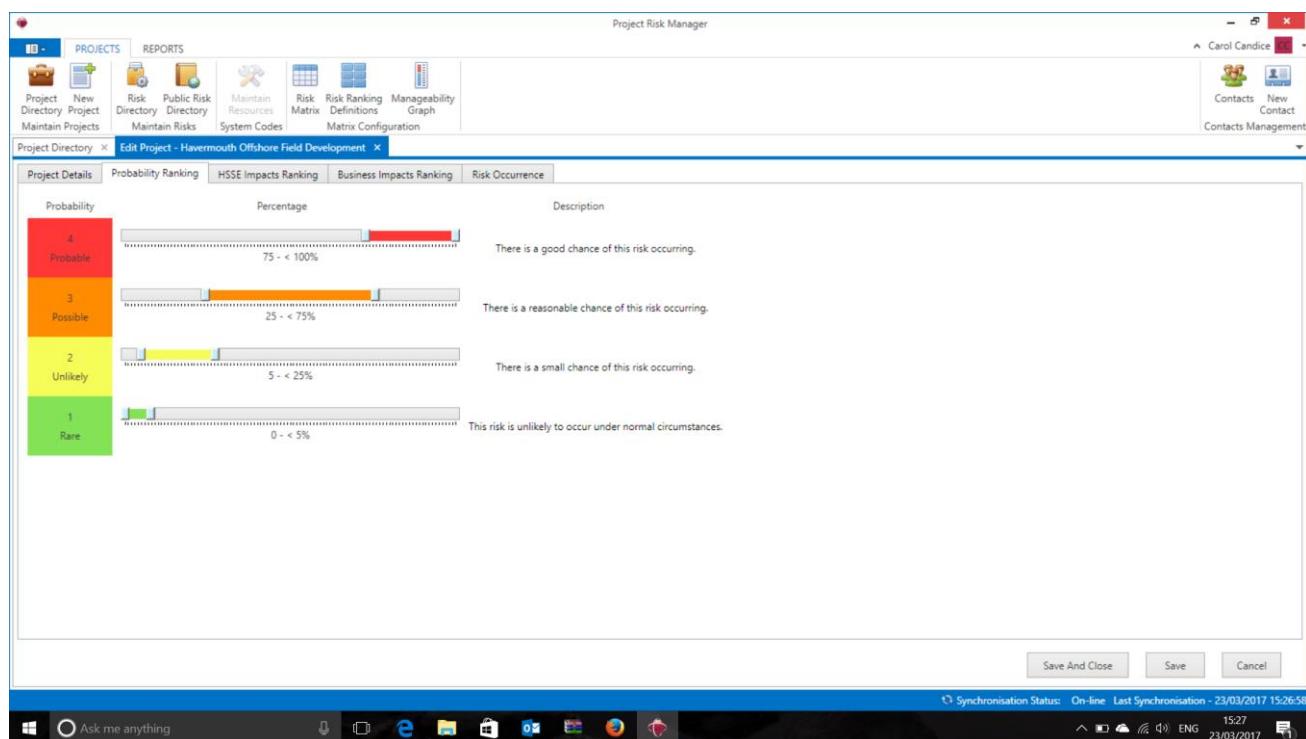
Prior to adding and managing project risks, the project risk configuration values need to be set up. These are the values which define the risk ranking ranges for risk occurrence probability and each risk impact category, as well as the expected risk occurrence timeline.

This application uses a 4 x 4 risk matrix to rank each risk in terms of Probability vs. Impact and uses the expected risk occurrence timeline to establish the manageability level of each risk.

### 5.1.2.1 Probability Ranking Setup

Risk probability ranking is defined as the percentage probability of the risk occurring. The four pre-defined probability range descriptions are:

- 1 – Rare: The risk is unlikely to occur under normal circumstances
- 2 – Unlikely: There is a small chance of the risk occurring
- 3 – Possible: There is a reasonable chance of the risk occurring
- 4 – Probable: There is a good chance of the risk occurring



Screen Shot 5 – Probability Ranking Setup

**Note:** Default probability ranking ranges are provided by the application. However, as each project differs in nature and risk exposure, these ranges may be edited by the Project Administrator or Risk Manager to suit their individual projects.

### 5.1.2.2 Impact Ranking Setup

Risk impact rankings are defined on a scale of 1 to 4. The four pre-defined impact range descriptions are:

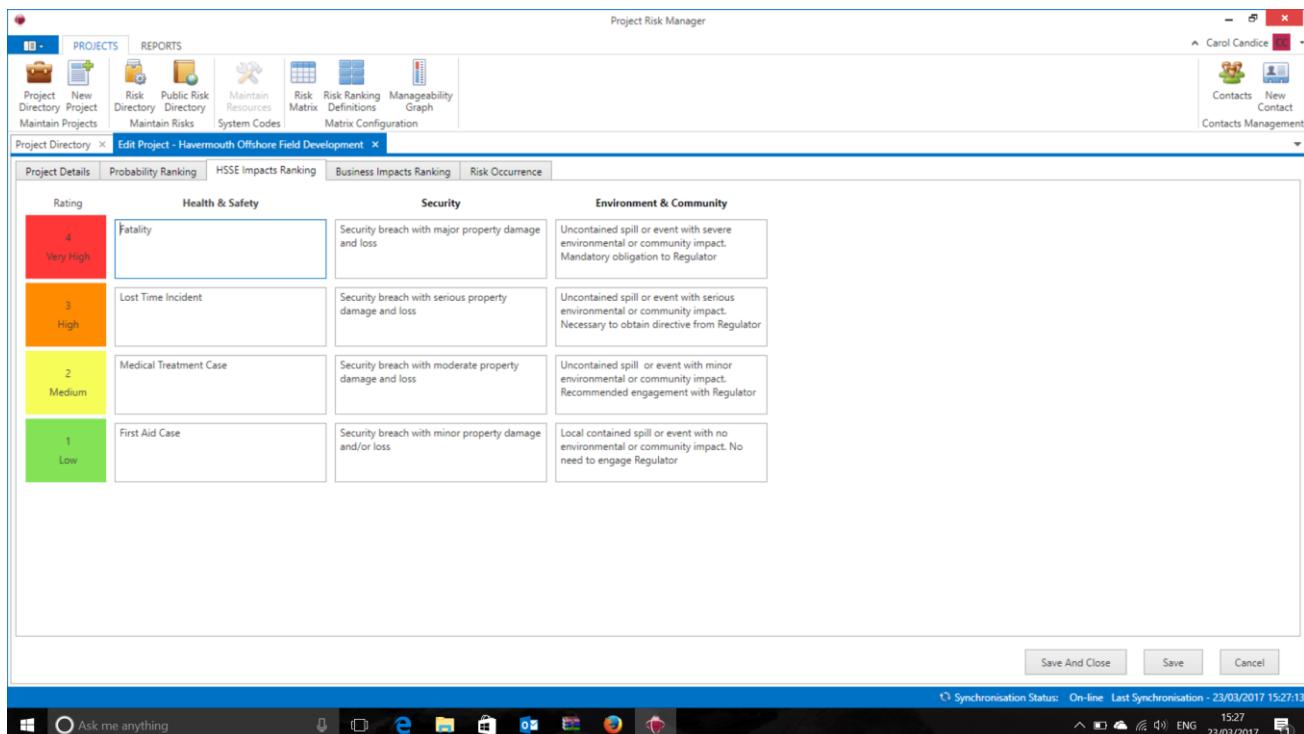
- 1 – Low
- 2 – Medium
- 3 – High
- 4 – Very High

Each impact ranking range has its own set of impact descriptions, depending on the impact category it falls under. There are two primary impact categories, being HSSE Impacts and Business Impacts, and each of these categories comprises their own sub-categories as follows:

## HSSE Impact Categories:

- ❖ Health & Safety
- ❖ Security
- ❖ Environment & Community

Each of the HSSE impact rankings are defined through text descriptions of the severity of their impacts.



Rating	Health & Safety	Security	Environment & Community
4 Very High	Fatality	Security breach with major property damage and loss	Uncontained spill or event with severe environmental or community impact. Mandatory obligation to Regulator
3 High	Lost Time Incident	Security breach with serious property damage and loss	Uncontained spill or event with serious environmental or community impact. Necessary to obtain directive from Regulator
2 Medium	Medical Treatment Case	Security breach with moderate property damage and loss	Uncontained spill or event with minor environmental or community impact. Recommended engagement with Regulator
1 Low	First Aid Case	Security breach with minor property damage and/or loss	Local contained spill or event with no environmental or community impact. No need to engage Regulator

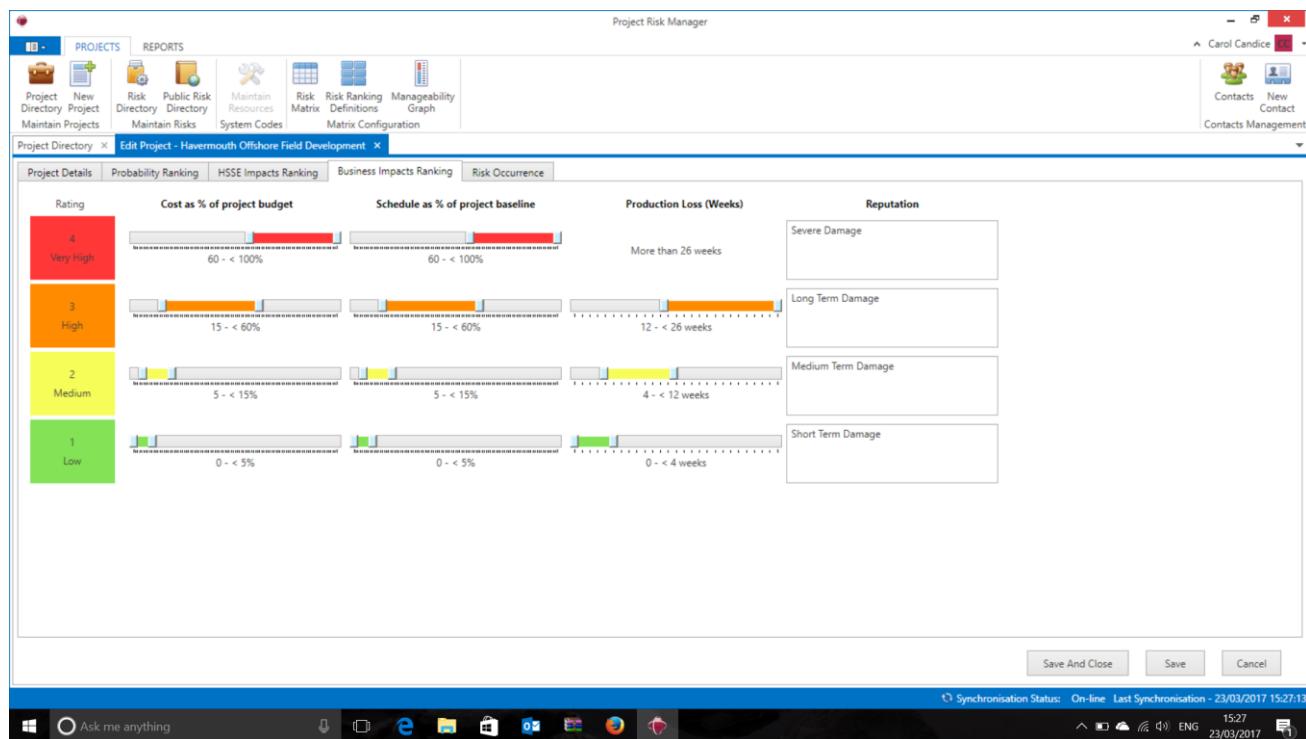
Screen Shot 6 – HSSE Impact Ranking Setup

## Business Impact Categories:

- ❖ Cost
- ❖ Schedule
- ❖ Production
- ❖ Reputation

Cost and schedule impact rankings are defined as a percentage of either the project commercial budget and baseline schedule, or the project contingency budget and schedule respectively. Due to the wide variance in project budgets and schedules, and what may be considered acceptable risk impact ranges for these two categories, the contingency budget and schedule fields are provided for use as an alternative to using actual project commercial budget and baseline schedule values to rank the cost and schedule impacts.

Production impact rankings are defined as the number of weeks of production loss, and reputation impact rankings are defined through text descriptions of the severity of their impact.



**Screen Shot 7 – Business Impact Ranking Setup**

**Note:** Default impact ranking descriptions are provided for each impact category by the application. However, as each project differs in nature and risk exposure, these descriptions may be edited by the Project Administrator or Risk Manager to suit their individual projects.

### 5.1.2.3 Risk Occurrence Timescale Setup

Risk occurrence timescale is used by the application, along with the number of mitigations identified, to determine the manageability level of each risk.

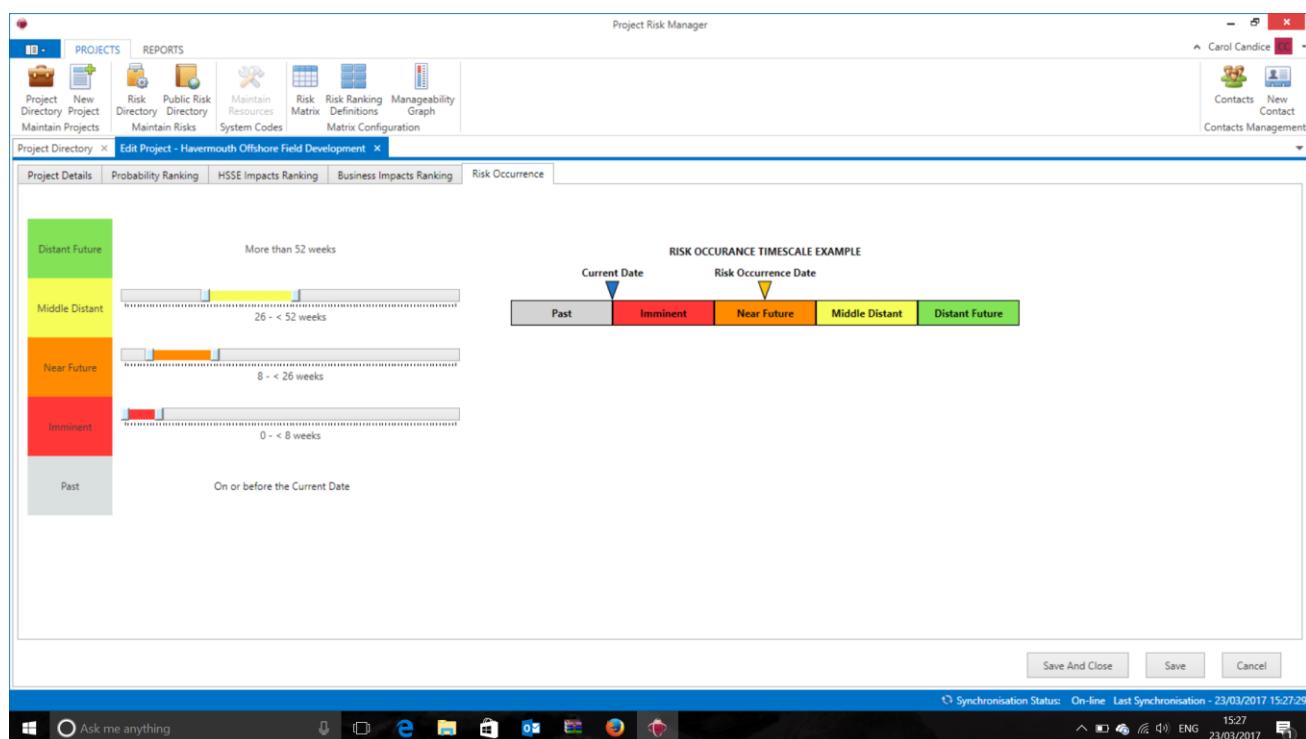
The user may customise the time scale range to be applied to “Imminent”, “Near Future”, “Middle Distant” and “Distant Future” risk occurrence timescales, but the default settings pre-loaded in the application are as follows:

Imminent = 0 – 8 weeks from Risk Raised Date

Near Future = 8 – 26 weeks from Risk Raised Date

Middle Distant = 26 – 52 weeks from Risk Raised Date

Distant Future = More than 52 weeks from Risk Raised Date

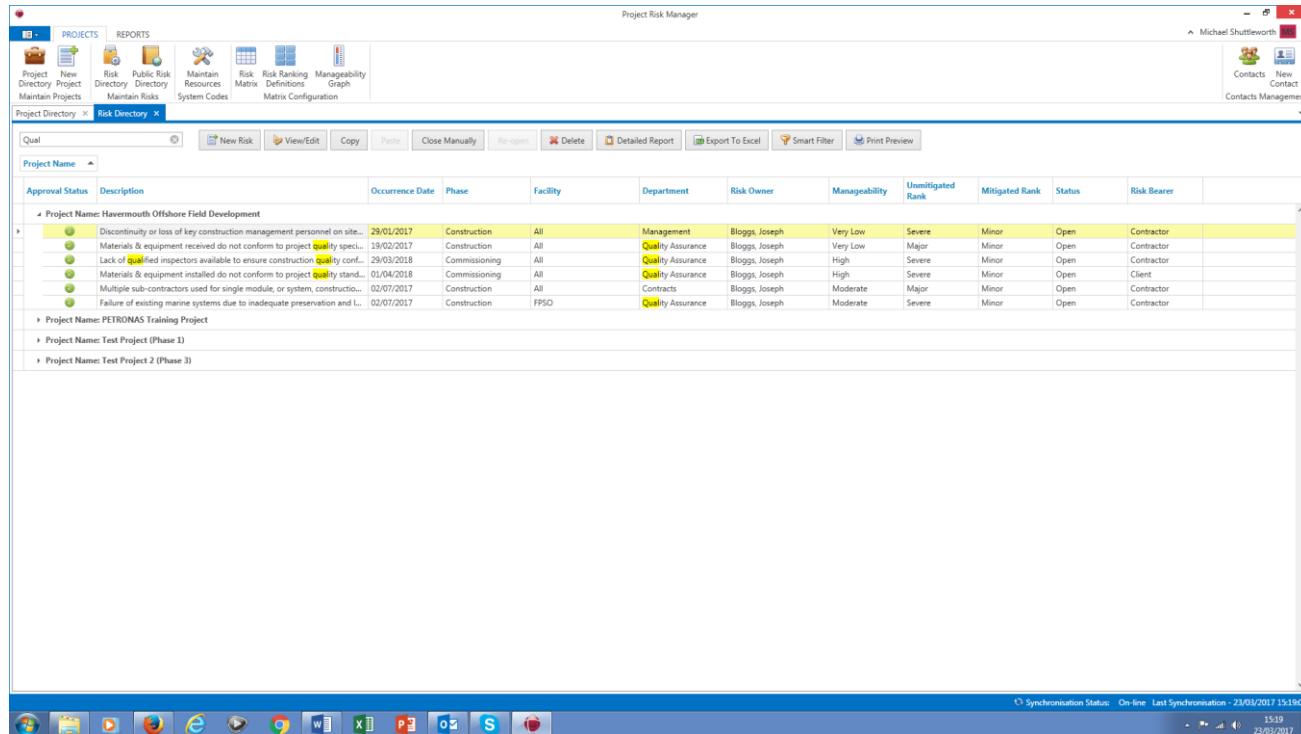


Screen Shot 8 – Risk Occurrence Timescale Setup

## 6 Risks

### 6.1 Risk Search, Add, Edit & Delete

Users may search for specific risk details contained in any one of the risk grid columns by typing the numeric or text string they are searching for into the “Search” form located at the top of the Risk Directory list.



The screenshot shows the Project Risk Manager application window. At the top, there's a toolbar with icons for New Risk, View/Edit, Copy, Paste, Close Manually, Re-open, Delete, Detailed Report, Export To Excel, Smart Filter, and Print Preview. Below the toolbar is a search bar labeled "Qual" and a dropdown menu for "Project Name". The main area is a grid table titled "Risk Directory" with columns: Approval Status, Description, Occurrence Date, Phase, Facility, Department, Risk Owner, Manageability, Unmitigated Rank, Mitigated Rank, Status, and Risk Bearer. The grid contains several rows of risk data, each with a small icon and some descriptive text. At the bottom of the grid, there are expandable sections for "Project Name: Havermouth Offshore Field Development", "Project Name: PETRONAS Training Project", "Project Name: Test Project (Phase 1)", and "Project Name: Test Project 2 (Phase 3)". The status bar at the bottom right shows "Synchronisation Status: On-line Last Synchronisation - 23/03/2017 15:19:03" and the date "23/03/2017".

**Screen Shot 9 – Dynamic Search**

By using the “Smart Filter” button located in the risk grid menu bar, users may filter for data to match specific criteria contained in one or more of the grid columns.

Users may also perform basic sort and filter functions on any of the risk directory grid columns by selecting the “Sort” and “Filter” icons in each column header. These icons are displayed when moving the mouse cursor over any of the column headers, or the user may access all sort and filter customisation options by right clicking the mouse when the cursor is placed over any of the column headers.

Project Risk Manager

Carol Candice

Project Directory Public Risk Directory

Search New Project View/Edit Delete Export To Excel Print Preview

Project Name	Client Name	Project Manager	Risk Manager	Planned Start Date	Planned End Date	Commercial Budget	Currency	Risk Count	Open	On-Going	Closed
Havermouth Offshore Field De...	SCS Ltd.	Bloggs, Joseph	Bloggs, Joseph	31/12/2015	30/12/2018	1,000,000.000	USD	35	24	4	7
PETRONAS Training Project	PETRONAS Project Governance	Shuttleworth, Michael	Candice, Carol	24/10/2016	31/10/2018	100,000,000	USD	14	7	3	4
Test Project (Phase 1)	Chevy-Shell Collaboration Ltd.	Shuttleworth, Michael	Bumm, Billy	30/06/2016	29/06/2018	100,000,000	USD	12	9	1	2
Test Project 2 (Phase 3)	PRM Project Testers	Dogg, Danny	Candice, Carol	02/01/2017	01/05/2018	500,000,000	AED	2	1	0	1

**Filter Editor**

And Occurrence Date Is greater than 20/07/2017  
Phase Equals Commissioning

Print Preview

Risk ID #	Approval	Description	Occurrence Date	Phase	Facility	Department	Risk Owner	Manageability	Unmitigated Rank	Mitigated Rank	Status	Risk Bearer	
HAV-A-0001		Discontinuity or loss of key construction management personnel on site.	29/01/2017					Very Low	Severe	Minor	Open	Contractor	
HAV-A-0001		Discontinuity or loss of key construction management personnel on site.	29/01/2017					Very Low	Severe	Minor	Open	Contractor	
HAV-A-0003		Delay in procurement and delivery of critical path equipment required for...	01/02/2017					Very Low	Major	Minor	Open	Contractor	
HAV-A-0034		Delay in completion of onshore scope, resulting in carry-over of onshor...	29/06/2018					High	Severe	Minor	Open	Contractor	
HAV-A-0002		Loss of control in transferring and accommodating additional personnel...	30/09/2018					High	Severe	Minor	Open	Client	
HAV-A-0004		Inadequate management of change control resulting in late re-engineer...	29/05/2016					Closed	Severe	Minor	Closed	Internal	
HAV-A-0005		Variation order requests not approved by client as a result of late & unc...	01/05/2016					Closed	Severe	Minor	Closed	Internal	
HAV-A-0006		Incomplete design, or errors in FEED, resulting in late design changes du...	29/06/2016					Closed	Major	Minor	Closed	Internal	
HAV-A-0007		Significant increase in commodity price, resulting in global increase in...	01/01/2017					Very Low	Major	Minor	On-Going	Internal	
HAV-A-0008		Materials & equipment received do not conform to project quality speci...	19/02/2017					Very Low	Major	Minor	Open	Contractor	
HAV-A-0010		Materials & equipment installed do not conform to project quality stand...	01/04/2018					High	Severe	Minor	Open	Contractor	
HAV-A-0009		Lack of qualified inspectors available to ensure construction quality conf...	29/03/2018					High	Severe	Minor	Open	Client	
HAV-A-0010		Materials & equipment installed do not conform to project quality stand...	01/04/2018					High	Severe	Minor	Open	Contractor	
HAV-A-0011		Political instability in region resulting in civil unrest spelling over to the c...	29/06/2017					Management	Bloggs, Joseph	Moderate	Major	Minor	On-Going
HAV-A-0012		Progress driven by available construction work faces rather than by syst...	29/03/2018					Management	Bloggs, Joseph	High	Severe	Minor	Open
HAV-A-0013		Fabrication and Construction commences prior to design deliverables is...	11/06/2017					Detailed Design	Bloggs, Joseph	Moderate	Major	Minor	On-Going
HAV-A-0014		Plant start-up prior to close-out of all SHEAMS register actions, resultin...	30/11/2018					Operations	Bloggs, Joseph	High	Severe	Minor	Open
HAV-A-0015		Design module weight beyond acceptable allowances during de...	11/12/2017					Detailed Design	Bloggs, Joseph	Closed	Major	Minor	Closed
HAV-A-0016		Fabricated module weights exceed design allowances, resulting in re-en...	02/01/2017					Construction	Bloggs, Joseph	Closed	Major	Minor	Closed
HAV-A-0017		Supplied module weights exceed design allowances, resulting in suppor...	04/03/2018					FEED	Bloggs, Joseph	Moderate	Severe	Minor	Open
HAV-A-0018		Inadequate marine repair and refurbishment surveys carried out prior to...	05/03/2016					Operations	Bloggs, Joseph	Closed	Major	Minor	Closed
HAV-A-0019		Multiple sites, locations and sub-contractors used for fabrication of plan...	02/07/2017					Construction	Bloggs, Joseph	Moderate	Severe	Minor	Open
HAV-A-0020		Multiple sub-contractors used for single module, or system, construction...	02/07/2017					Contracts	Bloggs, Joseph	Moderate	Severe	Minor	Open
HAV-A-0021		Modules or equipment mishandled or dropped during heavy lift operati...	03/12/2017					HSSE	Bloggs, Joseph	Moderate	Severe	Minor	Open
HAV-A-0022		Pre-fabricated tie-in spools do not match final position & orientation of...	30/09/2018					Wellhead Platforms	Bloggs, Joseph	High	Severe	Minor	Open
HAV-A-0023		Hook-up & Completions	Wellhead Platforms	Bloggs, Joseph	High	Severe	Minor	Open	Contractor				

Synchronization Status: On-line Last Synchronization - 23/03/2017 14:10:12

14:10 25/03/2017

Screen Shot 10 – Smart Filter

Risks may also be grouped by any one of the columns by dragging the relevant column header into the white space area directly above the Risk Directory listings.

Project Risk Manager

Michael Shuttleworth

Risk Directory

Project Name

Approval Status Description Occurrence Date Phase Facility Department Risk Owner Manageability Unmitigated Rank Mitigated Rank Status Risk Bearer

Project Name: PETRONAS Training Project											
<ul style="list-style-type: none"> <li>Soft soil conditions during pipe lay near protected marine park, resultin...</li> <li>Delay in completion of onshore scope, resulting in carry-over of onshor...</li> <li>Loss of control in transferring and accommodating additional personnel...</li> <li>Inadequate preservation of risers during installation, resulting in corro...</li> <li>Risk 6</li> <li>Inadequate management of change control resulting in late re-engineer...</li> <li>Risk MM-101</li> <li>Risk TP-103</li> <li>Plant start-up prior to close-out of all SHEAMS register actions, resultin...</li> </ul>											
02/04/2018	Transport & Installati...	Flowlines & Pipelines	Transport & Installati...	Candice, Carol	High	Severe	Minor	Open	Contractor		
29/06/2018	Hook-up & Completi...	All	Hook-up & Completi...	Candice, Carol	High	Severe	Minor	Open	Contractor		
30/09/2018	Hook-up & Completi...	All	Operations	Candice, Carol	High	Severe	Minor	Open	Client		
02/07/2017	Detailed Design	Central Processing Plant	Transport & Installati...	McSpoke, Spike	Moderate	Major	Minor	On-Going	Internal		
21/03/2017	Detailed Design	All	Engineering	Bumm, Billy	Very Low	Major	Minor	On-Going	Internal		
29/05/2016	Detailed Design	All	Engineering	Galytan, Suren	Closed	Severe	Minor	Closed	Internal		
01/06/2017	Detailed Design	Administration Block	Construction	McSpoke, Spike	Moderate	Major	Minor	On-Going	Internal		
02/07/2017	Construction	All	Contracts	McSpoke, Spike	Moderate	Major	Minor	Closed Manually	Contractor		
15/06/2017	Concept/Feasibility	All	Management	Shuttleworth, Michael	None	Major	Major	Open	Contractor		
30/11/2018	Operations	All	Management	Bumm, Billy	High	Major	Minor	Open	Internal		
<ul style="list-style-type: none"> <li>Project Name: Test Project (Phase 1)</li> <li>Project Name: Test Project 2 (Phase 3)</li> </ul>											

Synchronization Status: On-line Last Synchronization - 23/03/2017 15:22:18

15:22 23/03/2017

Screen Shot 11 – Risk Directory

To add a new risk, users may either select the “New Risk” button in the risk grid menu bar, or right-click in the Risk Directory list and select “New”.

To edit an existing risk, users may select the “View/Edit” button in the risk grid menu bar, double click on the selected risk from the Risk Directory list or, right-click on the selected risk in the Risks Directory list and select “Edit”.

To delete an existing risk, users may either select the “Delete” button in the risk grid menu bar, or right-click on the selected risk in the Risk Directory list and select “Delete”.

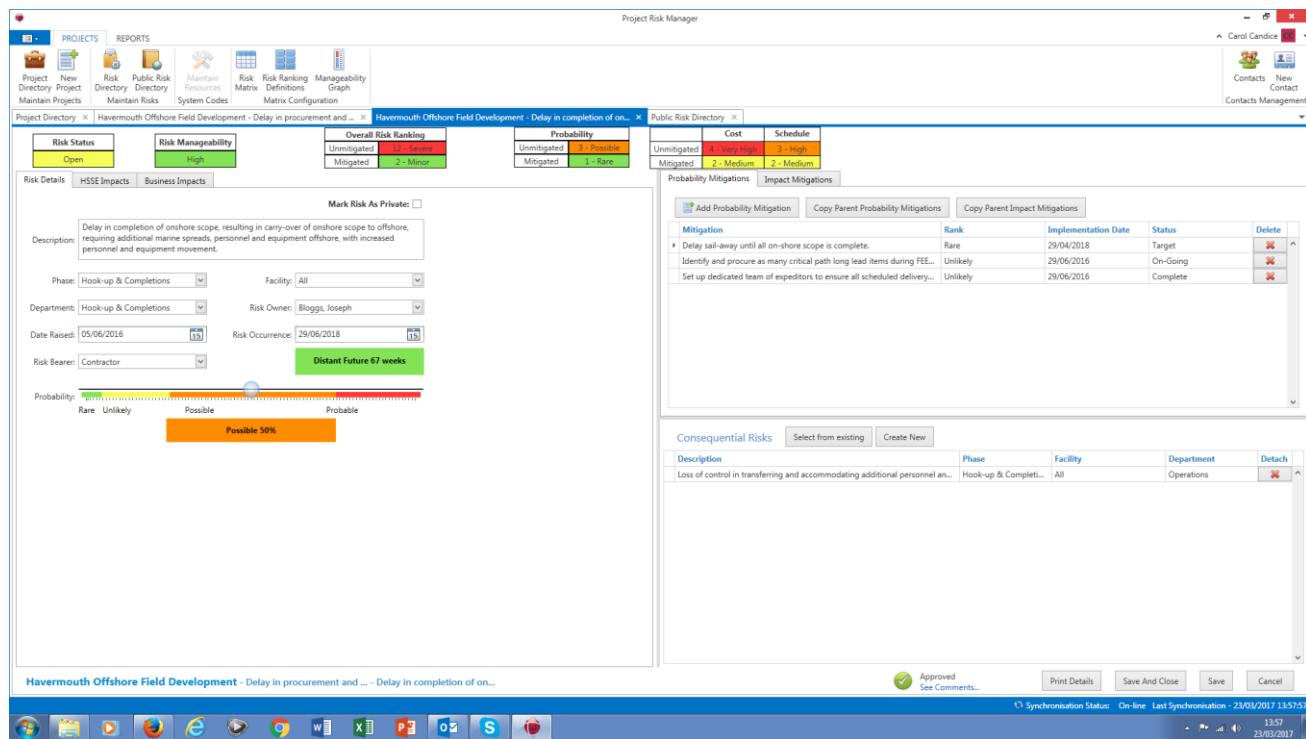
When choosing to delete a risk, the user will be given an appropriate warning asking if they are sure they want to delete the selected risk. Once deleted, the affected risk data will no longer be available to users and may only be recovered through the System Administrator performing a data restore.

## 6.2 Risk Details

On the Risk Details screen the user will initially capture the following basic risk details: Description, Phase, Facility, Department, Risk Owner, Date Raised, Estimated Risk Occurrence Date, Risk Bearer and Risk Probability.

Phase, Facility, Department and Risk Bearer will be selected via a drop-down menu, with values being obtained from the resource codes entered during System Setup.

Risk Owners will be selected via a search and drop-down menu, with values being obtained from the Contacts database. Risk Probability will be selected as a percentage using a slider bar, with the ranking ranges obtained from the values entered during Probability Ranking Setup.



The screenshot shows the 'Risk Details' screen for a risk titled 'Havermouth Offshore Field Development - Delay in completion of onshore scope'. The top navigation bar includes 'PROJECTS' and 'REPORTS' tabs, along with icons for 'New Project', 'Public Risk Directory', 'Risk Matrix', 'Risk Ranking Definitions', 'Manageability Graph', and 'Matrix Configuration'. A user profile 'Carol Candice' is visible on the right.

**Risk Status:** Open

**Risk Manageability:** High

**Overall Risk Ranking:** Unmitigated (4 - Severe)

**Probability:** Unmitigated (3 - Possible)

**Impact Mitigation:** Mitigated (2 - Minor)

**Cost:** Unmitigated (4 - Very High)

**Schedule:** Unmitigated (3 - High)

**Mitigation:**

Mitigation	Rank	Implementation Date	Status	Delete
Delay sail-away until all on-shore scope is complete.	Rare	29/04/2018	Target	
Identify and procure as many critical path long lead items during FEE...	Unlikely	29/06/2016	On-Going	
Set up dedicated team of expeditors to ensure all scheduled delivery...	Unlikely	29/06/2016	Complete	

**Risk Details:**

- Description: Delay in completion of onshore scope, resulting in carry-over of onshore scope to offshore, requiring additional marine spreads, personnel and equipment offshore, with increased personnel and equipment movement.
- Phase: Hook-up & Completions
- Facility: All
- Department: Hook-up & Completions
- Risk Owner: Bloggs, Joseph
- Date Raised: 05/06/2016
- Risk Occurrence: 29/06/2018
- Risk Bearer: Contractor
- Impact Mitigation: Distant Future 67 weeks

**Probability:** Possible 50%

**Consequential Risks:**

Description	Phase	Facility	Department	Detach
Loss of control in transferring and accommodating additional personnel an...	Hook-up & Comple...	All	Operations	

Buttons at the bottom include 'Approved' (with a green checkmark), 'See Comments...', 'Print Details', 'Save And Close', 'Save', and 'Cancel'.

Screen Shot 12 – Risk Details

### 6.2.1 Risk Owners vs. Risk Bearers

Risk Owners are the individual contacts assigned to manage specific risks. Risk Bearers are the entities which carry the risk, and on which the risk will have a direct impact.

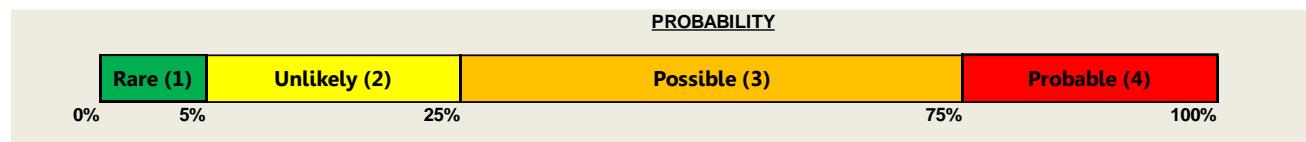
### 6.2.2 Risk Occurrence Date

The risk occurrence date will map to the ranges configured in Risk Occurrence Timescale Setup. This information is used, in conjunction with the number of mitigations identified, to derive the manageability level of each risk.

The risk occurrence date is also used to warn users if target mitigation implementation dates are set later than the risk occurrence date.

### 6.2.3 Probability Ranking Selection

Once system parameters have been set up, the user may select the risk probability ranking by use of a slider bar as depicted below. Probability ranking falls into 4 distinct ranges which are defined during Probability Ranking Setup.



When selecting probability ranking, the user will slide the selection handle up the ranking bar to select a percentage occurrence probability.

## 6.2.4 Impact Ranking Selection

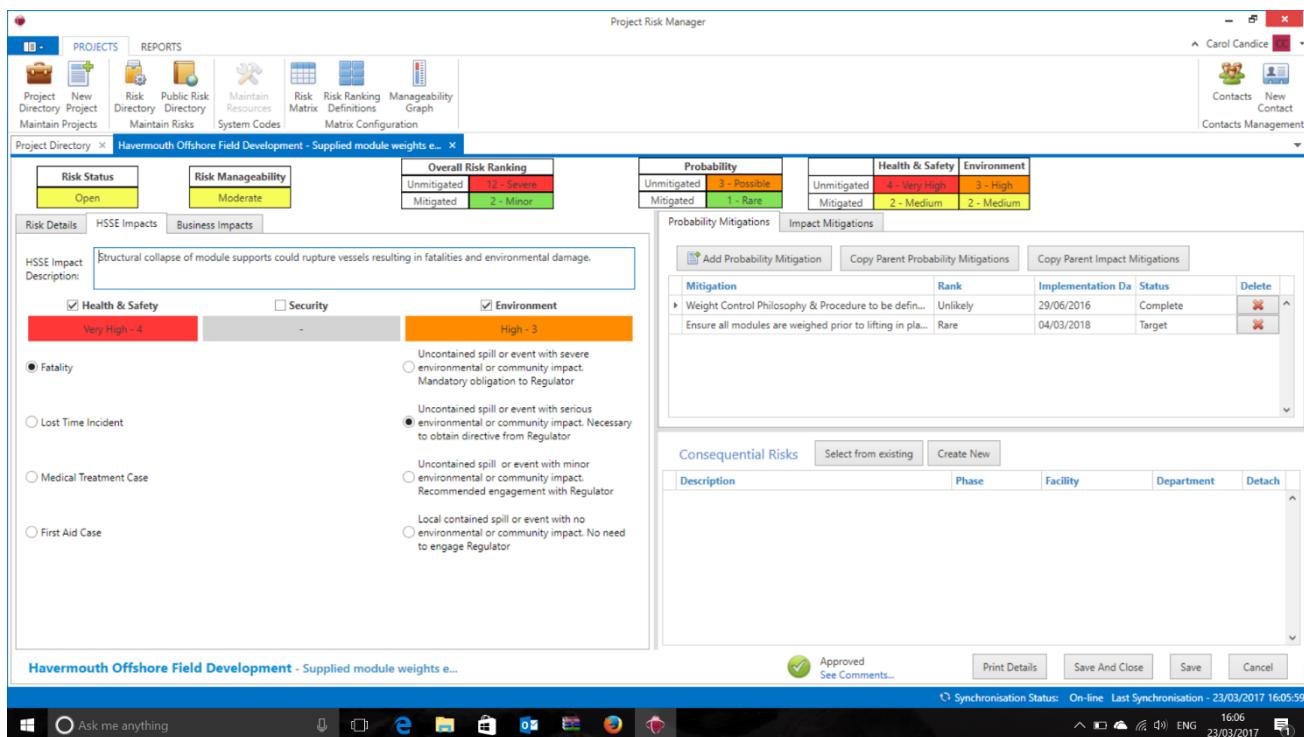
There are seven impact categories which have their range values for “Low”, “Medium”, “High” and “Very High” ranking defined during project Impact Ranking Setup.

The impact categories are divided into two groups, these being:

- ❖ HSSE Impacts
- ❖ Business Impacts

### 6.2.4.1 HSSE Impacts

HSSE Impacts comprise three separate impact categories describing the risk impact on: Health & Safety, Security and Environment & Community respectively. The user may select whichever impact category is applicable to the risk, and will then be presented with a severity description for each selected impact category in order to rank the impacts.



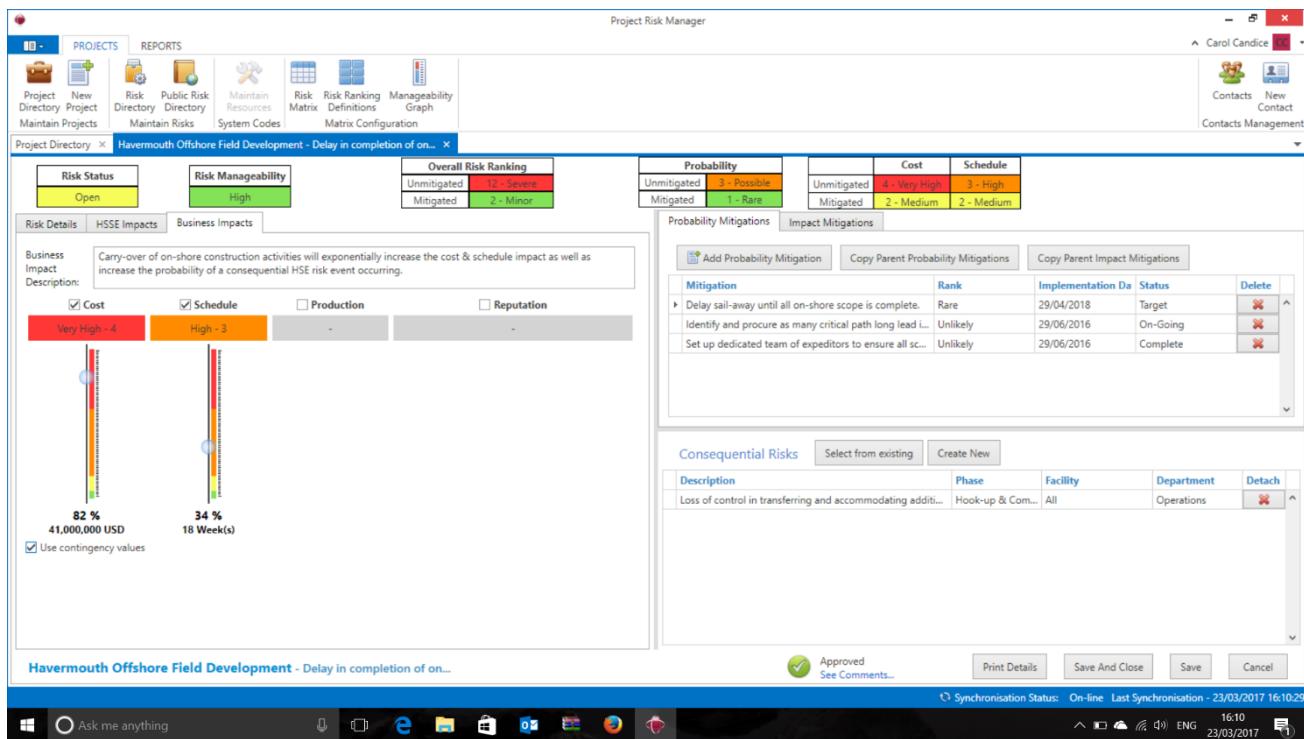
The screenshot shows the Project Risk Manager application window. The top menu bar includes 'PROJECTS' (selected), 'REPORTS', and various tool icons. The main content area is titled 'Havermouth Offshore Field Development - Supplied module weights e...' and displays the 'HSSE Impacts' tab. It features several risk matrices and mitigation tables. A detailed description of a hazard is shown, mentioning 'Structural collapse of module supports could rupture vessels resulting in fatalities and environmental damage.' Below this, there are sections for 'Health & Safety', 'Security', and 'Environment'. The 'Environment' section is checked and shows a severity scale from 'Very High - 4' to 'High - 3'. A detailed description of the environmental impact follows, mentioning 'Uncontained spill or event with severe environmental or community impact. Mandatory obligation to Regulator'. At the bottom right, there are buttons for 'Approved', 'Print Details', 'Save And Close', 'Save', and 'Cancel'.

Screen Shot 13 – HSSE Impacts

### 6.2.4.2 Business Impacts

Business Impacts comprise four separate impact categories describing the risk impact on: Cost, Schedule, Production and Reputation respectively. The user may select whichever impact category is applicable to the risk, and will then be presented with a severity ranking bar or description for each selected impact category in order to rank the impacts.

For Cost and Schedule impacts, users may choose to apply either the project commercial budget and baseline schedule, or the maximum cost and schedule exposure values to rank these impacts.



The screenshot shows the Project Risk Manager application window. The top menu bar includes 'PROJECTS' and 'REPORTS'. The left sidebar has icons for 'Project Directory', 'New Project', 'Risk Directory', 'Public Risk', 'Maintain Resources', 'System Codes', 'Risk Matrix', 'Risk Ranking Definitions', 'Manageability Graph', and 'Matrix Configuration'. The main content area displays the 'Business Impacts' tab for a specific risk item. The risk details section includes a description: 'Carry-over of on-shore construction activities will exponentially increase the cost & schedule impact as well as increase the probability of a consequential HSE risk event occurring.' Below this are checkboxes for 'Cost' (checked, 'Very High - 4'), 'Schedule' (checked, 'High - 3'), 'Production' (unchecked), and 'Reputation' (unchecked). To the right are two vertical severity ranking bars: one for 'Cost' showing '82 % 41,000,000 USD' and another for 'Schedule' showing '34 % 18 Week(s)'. A 'Probability' matrix table shows 'Unmitigated' as '4 - Possible' and 'Mitigated' as '3 - Rare'. A 'Cost' matrix table shows 'Unmitigated' as '4 - Very High' and 'Mitigated' as '2 - Medium'. A 'Schedule' matrix table shows 'Unmitigated' as '3 - High' and 'Mitigated' as '2 - Medium'. Below these are sections for 'Probability Mitigations' and 'Impact Mitigations', each with a table of mitigation steps and their status. At the bottom, there are buttons for 'Approved' (with a green checkmark), 'See Comments...', 'Print Details', 'Save And Close', 'Save', and 'Cancel'. The status bar at the bottom right shows 'Synchronisation Status: On-line Last Synchronisation - 23/03/2017 16:10:29', '16:10', 'ENG', and '23/03/2017'.

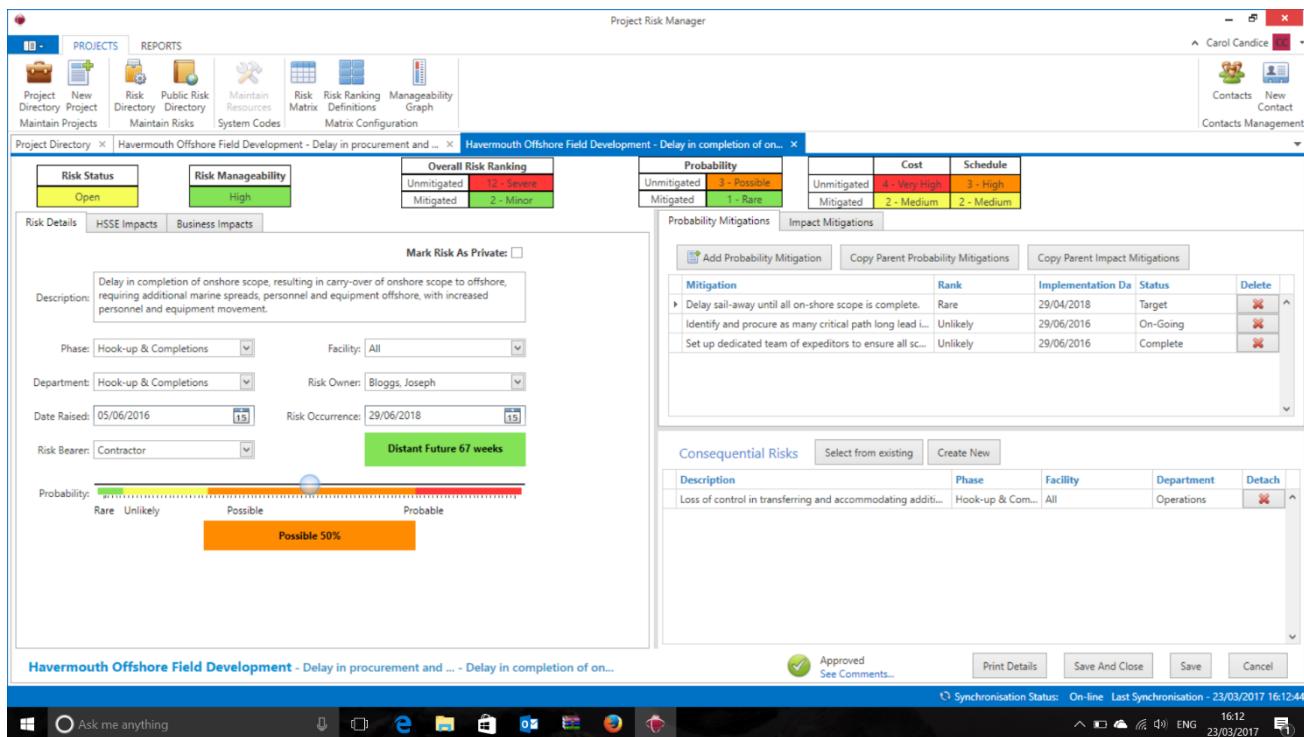
Screen Shot 14 – Business Impacts

## 6.2.5 Consequential Risks

In addition to risks having direct impacts, many risks may also trigger new risks. These are termed “Consequential Risks”. The user may either select existing, or create new, risks as consequential risks to any risk through the “Consequential Risks” window within the “Edit Risk” screen. If selecting an existing risk as a new consequential risk, the user will be presented with a list of all risks already registered in the project to choose from or, if creating a new consequential risk, the user will be presented with a new “Edit Risk” tab in which the new consequential risk details may be entered.

The risk from which a consequential risk has been linked or created is termed a “Parent Risk”. Consequential risks may share multiple parent risks and they themselves may, in turn, be the parent risks to multiple consequential risks. There will therefore be a traceable family tree of risks from the lowest placed consequential risk all the way back up through multiple parent, grand-parent, great grand-parent risks etc. as far as the user has linked them. The application runs a continuous check to ensure a parent (grand-parent, great grand-parent etc.) risk can never be linked as a consequential risk to itself and, likewise, a consequential risk can never be linked as a parent (grand-parent, great grand-parent etc.) risk to itself.

Users are able to view the navigation path taken to any risk via its parent risks in the bottom left corner of the “Edit Risk” window.



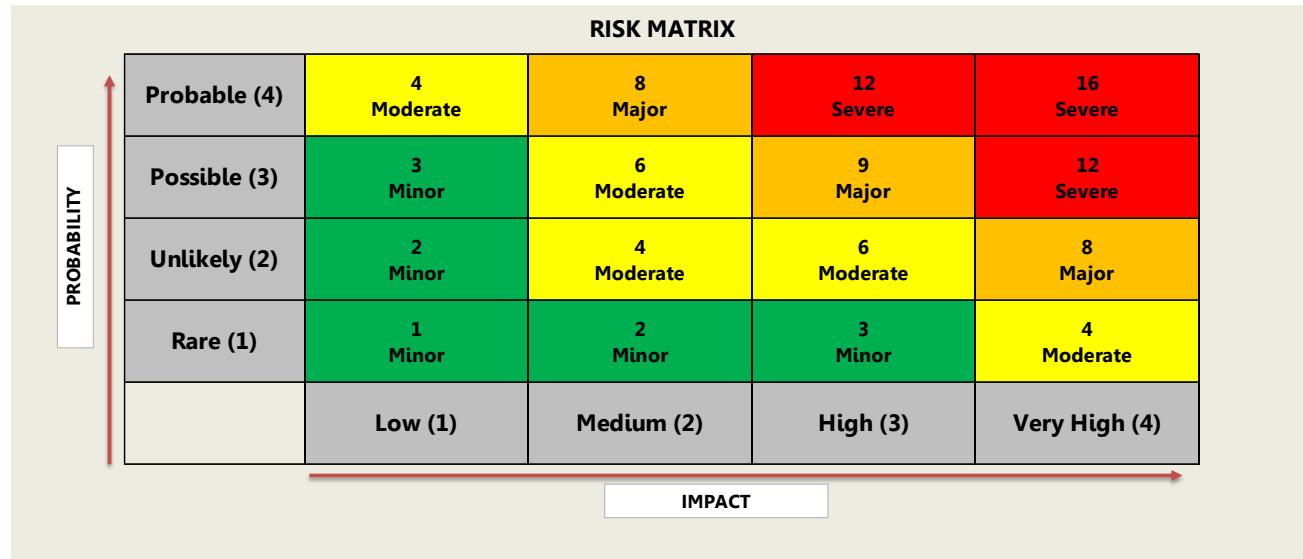
The screenshot shows the Project Risk Manager software interface. The main window displays a risk record for "Havermouth Offshore Field Development - Delay in completion of onshore scope". Key details shown include:

- Risk Status:** Open
- Risk Manageability:** High
- Overall Risk Ranking:** Unmitigated (72 - Severe)
- Probability:** Unmitigated (3 - Possible)
- Cost:** 4 - Very High
- Schedule:** 3 - High
- Mitigation:** Mitigated (1 - Rare)
- Impact Mitigations:** A table listing three mitigation steps with their status (e.g., Delay sail-away until all on-shore scope is complete, Set up dedicated team of expeditors to ensure all sc...).
- Consequential Risks:** A table showing a linked risk: "Loss of control in transferring and accommodating additi..." with details: Phase: Hook-up & Completions, Facility: All, Department: Operations.
- Buttons:** Approved, Print Details, Save And Close, Save, Cancel.

Screen Shot 15 – Consequential Risks

## 6.3 Risk Ranking

Risks are ranked as the product of Probability Ranking x Highest Impact Ranking. The risk ranking matrix and risk definition table can be viewed by the user under the “Matrix Configuration” menu tab.



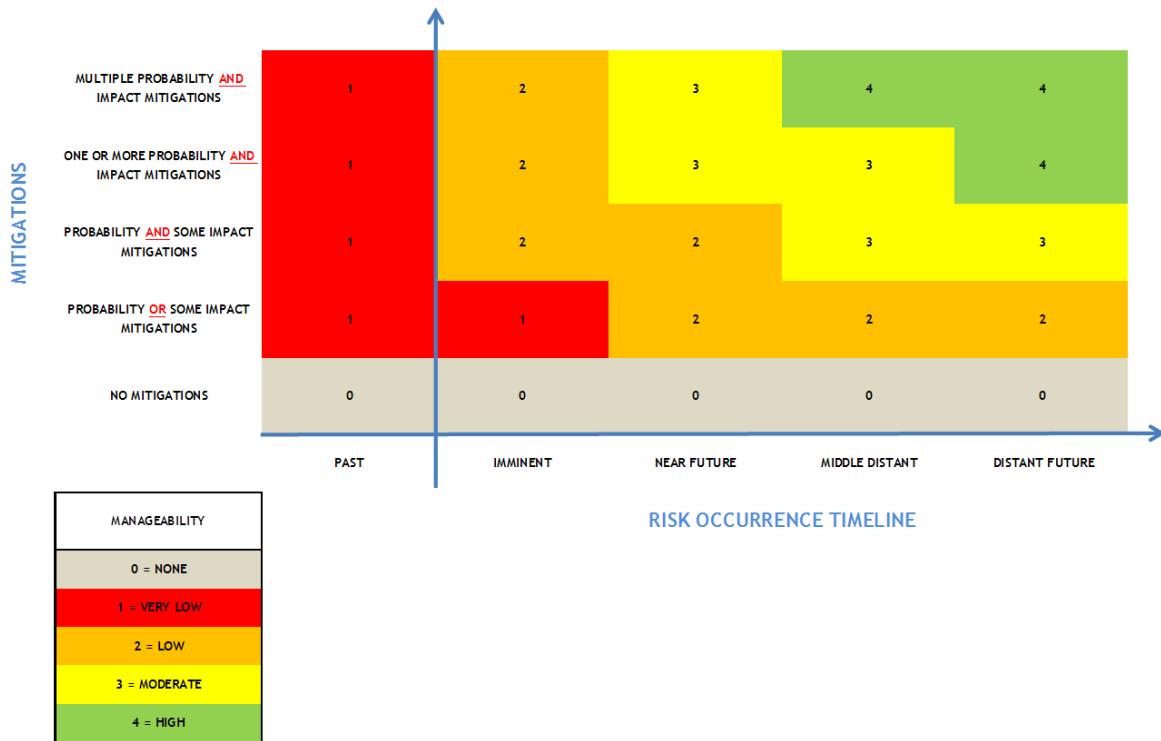
RANKING	RISK DEFINITION
SEVERE	Risk that has a severe negative effect on objectives that cannot be endured. Urgent management attention required to reduce probability and impact. If the risk cannot be mitigated then it may invalidate the relevant objective or venture.
MAJOR	Risk that has major negative effect on objectives. Management attention required to reduce probability and impact. If the risk cannot be mitigated then it may have serious implications in relation to the objectives.
MODERATE	Risk that has a moderate negative effect on objectives that can be managed. Management attention should be applied to reduce the probability and impact. However, for those risks with a "Very High Impact", "Rare Probability" rating, a robust fall-back/contingency plan may suffice, plus early warning mechanisms to detect any increase in likelihood so that appropriate management action can be taken.
MINOR	Risk that has a minor negative effect on objectives. Risks with a "Low Impact", "Possible Probability" rating may require some mitigation to reduce probability, if this can be done cost effectively, to minimise the chance of risk occurrence and, hence, of any impact occurring. Likewise, risks with a "High Impact", "Rare Probability" rating may require some mitigation to reduce impact, but also only if this can be done cost effectively.

## 6.4 Risk Manageability

The system defines risk manageability by applying the rules as defined in the Risk Manageability table, which can be viewed by the user under the “Matrix Configuration” menu tab.

	Manageability Rules		
<b>4 High</b>	It will be possible to reduce the probability and all impacts of this risk through the application of multiple mitigations to both probability and each impact.	<b>AND</b>	The risk is likely to occur any time from the middle-distant to distant future.
	<b>OR</b>		
<b>3 Moderate</b>	It will be possible to reduce the probability and all impacts of this risk through the application of one or more mitigations to both probability and each impact.	<b>AND</b>	The risk is likely to occur any time in the distant future.
	<b>OR</b>		
<b>2 Low</b>	It will be possible to reduce the probability and all impacts of this risk through the application of multiple mitigations to both probability and each impact.	<b>AND</b>	The risk is likely to occur any time from the near to middle-distant future.
	<b>OR</b>		
<b>1 Very Low</b>	It will only be possible to reduce the probability and some of the impacts of this risk through application of one or more mitigations to probability and some of the impacts, but not all.	<b>AND</b>	The risk is likely to occur any time from the middle-distant to distant future.
	<b>OR</b>		
<b>0 None</b>	It will only be possible to reduce either the probability or some of the impacts of this risk through application of one or more mitigations to either probability, or one or more of the impacts, but not both.	<b>AND</b>	The risk is likely to occur any time from the near to distant future.
	<b>OR</b>		
<b>0 None</b>	It will only be possible to reduce some of the impacts of this risk through application of one or more mitigations to one or more of the impacts. No mitigations are possible to reduce probability, as the risk has already occurred.	<b>AND</b>	The risk has already occurred.
	There are no mitigations available which will reduce either the probability or impacts of this risk.		

### MANAGEABILITY GRAPH

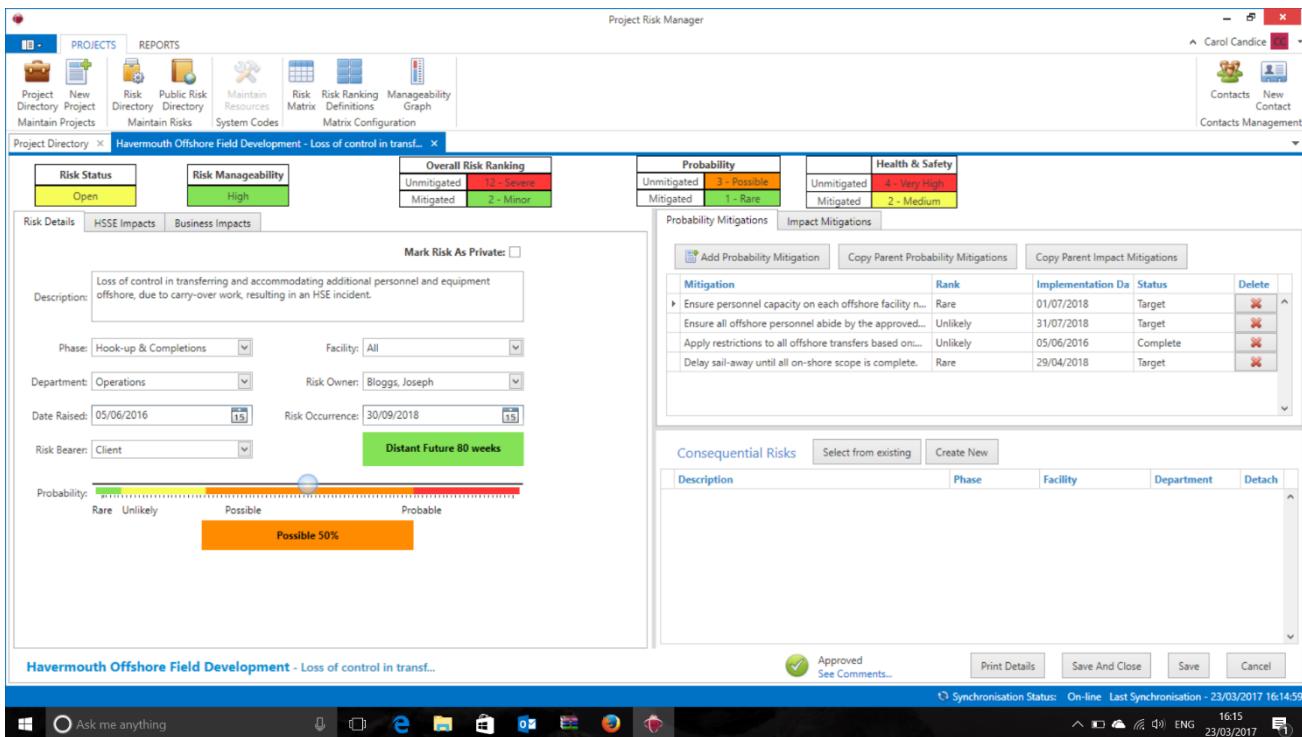


Risk manageability is derived from the risk occurrence date and the number of mitigations available for implementation. The more distant the risk occurrence date is and the more mitigations there are, the more manageable the risk is. Conversely, manageability becomes lower the closer one gets to the risk occurrence date. This information is helpful in identifying risks which are either inadequately mitigated, or need to have their mitigations implemented urgently due to the proximity of the risk occurrence date.

## 7 Mitigations

Mitigations are divided into two separate groups, these being:

- ❖ Probability Mitigations
- ❖ Impact Mitigations



The screenshot shows the Project Risk Manager application window. The main title bar says "Project Risk Manager". The menu bar has "PROJECTS" selected. The toolbar includes icons for Project Directory, New Project, Risk Directory, Public Risk, Maintain Resources, Risk Matrix, Risk Ranking Definitions, Manageability Graph, and System Codes.

The main content area displays a risk entry for "Havermouth Offshore Field Development - Loss of control in transf...". The risk details include:

- Risk Status: Open
- Risk Manageability: High
- Overall Risk Ranking: Unmitigated (Red)
- Probability: Unmitigated (3 - Possible)
- Health & Safety: Unmitigated (4 - Very High)

Below the risk details, there are tabs for "HSSE Impacts" and "Business Impacts". A "Mark Risk As Private" checkbox is present. The "Description" field contains a note about loss of control during transfers. Other fields include Phase (Hook-up & Completions), Facility (All), Department (Operations), Risk Owner (Bloggs, Joseph), Date Raised (05/06/2016), Risk Occurrence (30/09/2018), and Risk Bearer (Client). A "Distant Future 80 weeks" button is visible. A probability slider is shown with markers for Rare, Unlikely, Possible, and Probable, with "Possible 50%" highlighted.

The right side of the screen shows the "Mitigation" section. It includes tables for "Probability Mitigations" and "Impact Mitigations". The "Probability Mitigations" table lists four entries:

Mitigation	Rank	Implementation Da	Status	Delete
Ensure personnel capacity on each offshore facility n...	Rare	01/07/2018	Target	X
Ensure all offshore personnel abide by the approved...	Unlikely	31/07/2018	Target	X
Apply restrictions to all offshore transfers based on...	Unlikely	05/06/2016	Complete	X
Delay sail-away until all on-shore scope is complete.	Rare	29/04/2018	Target	X

The "Impact Mitigations" section is currently empty. At the bottom of the window, there are buttons for "Approved", "Print Details", "Save And Close", "Save", and "Cancel". The status bar at the bottom right shows "Synchronisation Status: On-line Last Synchronisation - 23/03/2017 16:14:59" and "1615 ENG 23/03/2017".

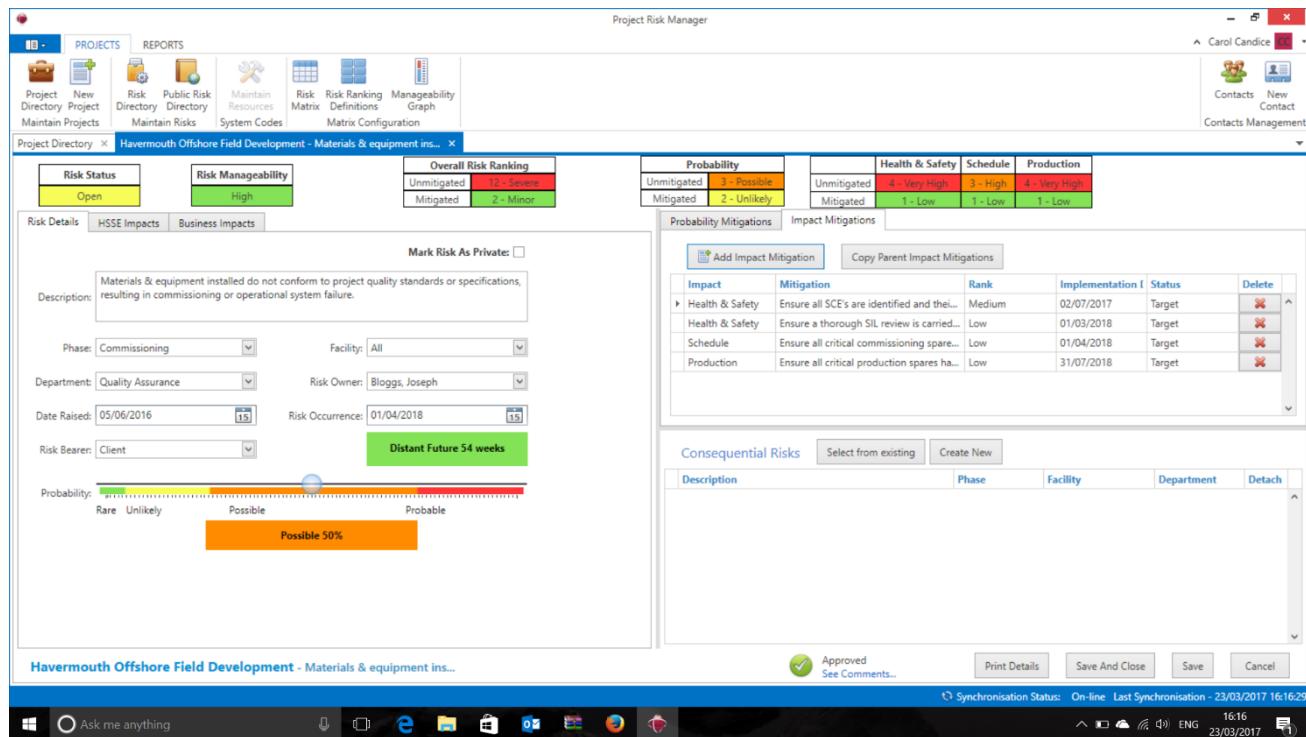
**Screen Shot 16 – Probability Mitigations**

Users may add mitigations for each group, with an impact category menu selection available in the Impact Mitigations group, allowing the user to select each impact mitigation to match its applicable impact category.

For each mitigation entered, the user is required to select a mitigated ranking value. This value may be the same, or lower, than the unmitigated rank, but not higher. The user will also be required to select the mitigation status as “Target”, “On-Going” or “Complete” and enter the mitigation status achievement date.

If the status achievement date is assigned as “Target”, this date should to be no later than the date entered for the estimated risk occurrence. If it is later, a warning will be displayed to the user advising that the entered date is later than the risk occurrence date. The user may choose to ignore this warning and keep the target date as it is, or go back and either change the estimated risk occurrence date or change the target mitigation implementation date.

As each new mitigation is entered, with its mitigated ranking, status and implementation dates defined, the system will automatically update the overall risk status, manageability and ranking in accordance with each new mitigation added.



The screenshot shows the Project Risk Manager application window. At the top, there's a toolbar with icons for 'PROJECTS' and 'REPORTS'. Below the toolbar, a navigation bar includes 'Project Directory', 'New Project', 'Risk Directory', 'Public Risk', 'Maintain Resources', 'System Codes', 'Risk Matrix', 'Risk Ranking Definitions', 'Manageability Graph', and 'Matrix Configuration'. On the right side of the header, there are user details ('Carol Candice') and links for 'Contacts', 'New Contact', and 'Contacts Management'.

The main content area displays a risk record for 'Havermouth Offshore Field Development - Materials & equipment ins...'. It shows 'Risk Status' as 'Open' and 'Risk Manageability' as 'High'. The 'Overall Risk Ranking' is 'Unmitigated (2 - Severe)'. A 'Probability' table shows 'Unmitigated' as '3 - Possible' and 'Mitigated' as '2 - Minor'. A 'Health & Safety' table shows 'Unmitigated' as '4 - Very High' and 'Mitigated' as '1 - Low'. A 'Schedule' table shows 'Unmitigated' as '3 - High' and 'Mitigated' as '1 - Low'. A 'Production' table shows 'Unmitigated' as '4 - Very High' and 'Mitigated' as '1 - Low'.

Below the risk status, there are tabs for 'Risk Details', 'HSSE Impacts', and 'Business Impacts'. Under 'Risk Details', there's a 'Description' field containing the text: 'Materials & equipment installed do not conform to project quality standards or specifications, resulting in commissioning or operational system failure.' There are dropdowns for 'Phase' (Commissioning), 'Facility' (All), 'Department' (Quality Assurance), 'Risk Owner' (Bloggs, Joseph), 'Date Raised' (05/06/2016), 'Risk Occurrence' (01/04/2018), and 'Risk Bearer' (Client). A 'Distant Future 54 weeks' button is also present. A probability slider is shown with markers for 'Rare', 'Unlikely', 'Possible', and 'Probable', with 'Possible 50%' highlighted.

To the right, there are sections for 'Probability Mitigations' and 'Impact Mitigations'. The 'Impact Mitigations' table lists four entries:

Impact	Mitigation	Rank	Implementation	Status	Delete
Health & Safety	Ensure all SCE's are identified and thei...	Medium	02/07/2017	Target	
Health & Safety	Ensure a thorough SIL review is carried...	Low	01/03/2018	Target	
Schedule	Ensure all critical commissioning spare...	Low	01/04/2018	Target	
Production	Ensure all critical production spares ha...	Low	31/07/2018	Target	

Below this is a 'Consequential Risks' section with buttons for 'Select from existing' and 'Create New'. At the bottom of the screen, there are buttons for 'Approved', 'Print Details', 'Save And Close', 'Save', and 'Cancel'. The status bar at the bottom right shows 'Synchronisation Status: On-line Last Synchronisation - 23/03/2017 16:16:29' and the date '23/03/2017'.

**Screen Shot 17 – Impact Mitigations**

Risk status is “Open” until all mitigations which have been identified are assigned as either “On-Going” or “Complete” for both risk probability and every impact category selected by the user, and the highest overall mitigated risk ranking is 3 or less.

- When all mitigations are assigned as either “On-Going” or “Complete”, with at least one mitigation being assigned as “On-Going”, and the highest overall mitigated risk ranking is 3 or less, the risk status will be displayed as “On-Going”.
- When all mitigations are assigned as “Complete” and the highest overall mitigated risk ranking is 3 or less, the risk status will be displayed as “Closed”.

There is one exception to this rule and this is when a risk has already occurred (i.e. it is unavoidable). In such instances the risk occurrence date will be in the past and the probability of occurrence will equal 100%. This means that only the risk impacts can be mitigated and the overall risk rank will therefore never be less than 4. The application recognises this exception and will close a risk if these conditions are met.

The overall risk ranking will always be displayed as a product of Probability x Highest Impact in both the unmitigated and mitigated risk rankings.

## 7.1 Copying Consequential Risk Mitigations from Parent Risks

It is possible that any consequential risk may be adequately mitigated and closed through mitigations applied to its parent risk. The user may therefore copy mitigations from a parent risk to the consequential risk and, if no other mitigations are required for the consequential risk, this action may close the consequential risk.

Note, however, that for impact mitigations the application will only copy mitigations from impact categories which are shared with the consequential risk. For example, if a parent risk has two impact categories being; Health & Safety and Cost, but the consequential risk only has the Health & Safety impact category shared with its parent risk, then copying the impact mitigations from the parent risk to consequential risk will only copy the Health & Safety mitigations and not the Cost mitigations.

With certain risks, mitigations applied to the impacts of a parent risk may serve to mitigate the probability of the consequential risks. It is therefore possible to copy both probability and impact mitigations from a parent risk to the probability mitigations of the consequential risk. It is not, however, possible to mitigate the impacts of a consequential risk by applying probability mitigations of the parent risk to the impact mitigations of the consequential risk. So, the feature of copying impact mitigations from a parent risk is only available to either impacts of the same category, or probability.

## 8 Automatic Risk Alerts

The application will automatically alert Risk Owners and Risk Managers whenever a new risk is added, or whenever a critical date, or action, is nearing on any risk.

These alerts are sent out in the form of automatic system emails, which are triggered as follows:

### 8.1 Notification of New Risks

Whenever a new risk is created by a Risk Owner, and the “Submit for Approval” button is clicked, the system will automatically send an email to the assigned Risk Manager advising them that a new risk has been submitted for their approval. The email notification will include the risk description so that the Risk Manager knows which risk is being referenced. All risks pending approval are identifiable by the “Pending” icon, which is displayed in the Approval column of the Risk Directory.

Whenever a new risk is created by an assigned Project Manager, Risk Manager, or any other user with either Project Administrator or System Administrator access rights, the system will automatically send an email to the assigned Risk Owner advising them that a new risk has been added which requires their attention. The email notification will include the risk description so that the Risk Owner knows which risk is being referenced.

### 8.2 Notification of Target Mitigation Date

Whenever the target implementation date of a mitigation is due within 5 days, the system will automatically send an email to the assigned Risk Owner advising them that a mitigation is due to be implemented on one of their risks within the next five days. The email notification will include the risk description so that the Risk Owner knows which risk is being referenced.

If the status of a “Target” mitigation is not changed to either “On-Going” or “Closed” on, or before, the date specified as the target implementation date, the system will automatically send another email to the assigned Risk Owner on the target implementation date, advising them that their mitigation action date is now due.

### 8.3 Notification of Risk Occurrence Date

Whenever the risk occurrence date of a risk which is either still “Open”, or “On-Going”, is due within 5 days, the system will automatically send an email to the assigned Risk Owner advising them that one of their risks is due to occur within the next five days. The email notification will include the risk description so that the Risk Owner knows which risk is being referenced.

If the status of the risk is not changed to “Closed” on, or before, the date specified as the risk occurrence date, the system will automatically send another email to the assigned Risk Owner on the risk occurrence date, advising them that the risk is now due to occur.

***There is one exception to this rule which is:***

If the risk occurrence date is set prior to the “Risk Raised” date, no automatic email notification will be sent, as the Risk Occurrence Date has already passed.

## 9 Risk Status

Based on risk mitigation status, and the mitigated risk ranking, a risk's overall status will be updated as follows:

IF the overall unmitigated risk ranking < 4 the risk status is "Closed"

Else IF (all mitigation implementation statuses are "Complete" and the overall mitigated risk ranking < 4) the risk status is "Closed"

Else IF (no mitigation implementation statuses are "Target", and at least one mitigation implementation status is "On-Going", and the overall mitigated risk ranking < 4) the risk status is "On-Going"

Else the risk status is "Open".

***There is one exception to this rule which is:***

IF (Risk Occurrence Date = "Past", and Risk Probability = 100%, and all mitigation implementation statuses are "Complete", and the overall mitigated risk ranking = 4) the risk status is "Closed".

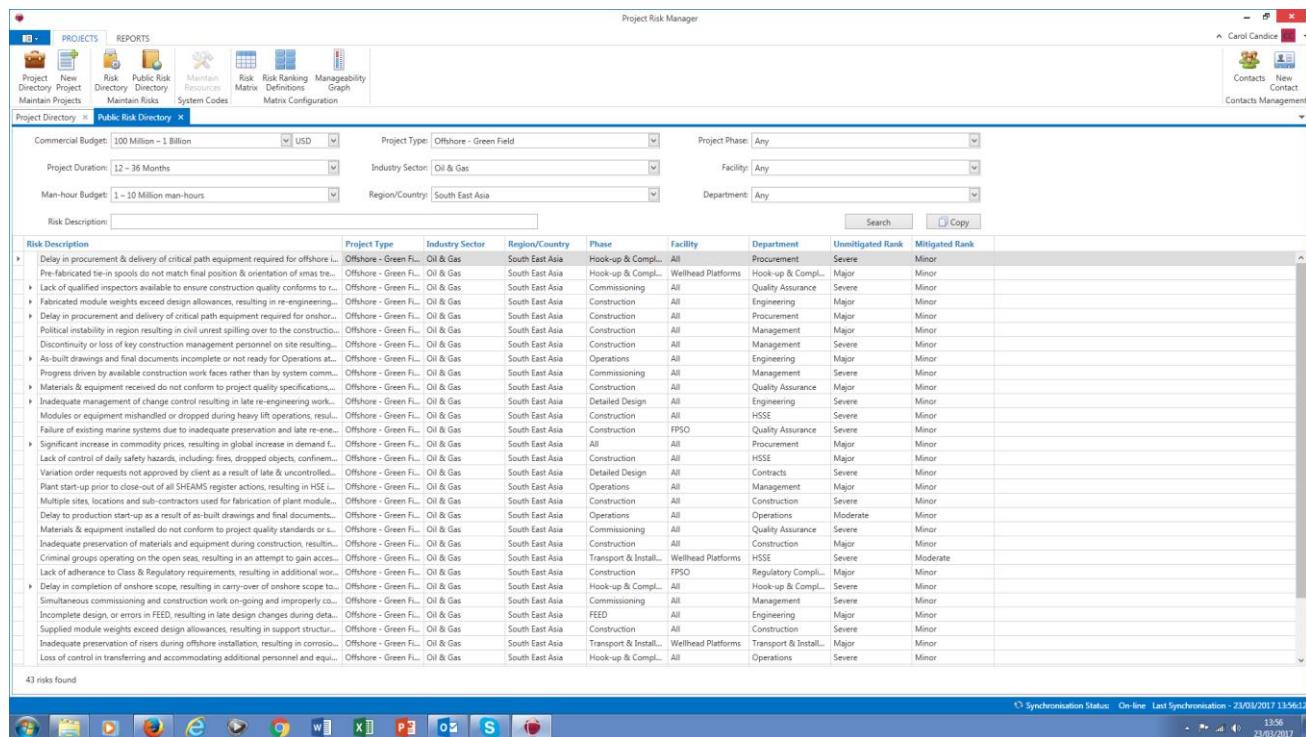
### 9.1 Manually Closing Risks

Risk owners may manually close any risk, by clicking on the "Close Manually" button in either the Project Directory or Risk Directory screens, even if not all of the mitigation implementation statuses are "Complete", or the overall mitigated risk ranking  $\geq 4$ . In the event of manually closing a risk, the system will prompt the user to provide a justification for closing the risk. All risks that have been manually closed may be re-opened at any stage by clicking on the "Re-open" button.

## 10 Public Risk Directory

The application allows users of the “Pro” software version to share risks on a Public Risk Directory. This directory is available to all subscribers and allows users to search for, and copy, risks from the public directory to their own projects. No project specific or personal information is stored on the Public Risk Directory so, when users copy risks from the public directory, only the publicly available risk details such as risk description, probability, impacts and mitigations are copied. Once a risk has been copied and pasted to individual projects, the risk details will need to be revised to suit the user’s individual project parameters.

Users with Risk Manager or higher access rights may mark selected risks as “Private”. This will disable the automatic sharing functionality, and all risks marked as “Private” will not be shared on the Public Risk Directory.



Risk Description	Project Type	Industry Sector	Region/Country	Phase	Facility	Department	Unmitigated Rank	Mitigated Rank
Delay in procurement & delivery of critical path equipment required for offshore L...	Offshore - Green Fl...	Oil & Gas	South East Asia	Hook-up & Compl...	All	Procurement	Severe	Minor
Pre-fabricated tie-in spools do not match final position & orientation of rms tra...	Offshore - Green Fl...	Oil & Gas	South East Asia	Wellhead Platforms	Hook-up & Compl...	Quality Assurance	Severe	Minor
Lack of qualified inspectors available to ensure construction quality conforms to r...	Offshore - Green Fl...	Oil & Gas	South East Asia	Commissioning	All	Engineering	Major	Minor
Fabricated module weights exceed design allowances, resulting in re-engineering...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Procurement	Major	Minor
Delay in procurement and delivery of critical path equipment required for onshore...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Management	Major	Minor
Political instability in region resulting in civil unrest spelling over to the construct...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Management	Severe	Minor
Discontinuity or loss of key contractor management personnel on site resulting in...	Offshore - Green Fl...	Oil & Gas	South East Asia	Operations	All	Engineering	Major	Minor
As-built drawings and final documents incomplete as a result of project quality specifications...	Offshore - Green Fl...	Oil & Gas	South East Asia	Commissioning	All	Management	Severe	Minor
Materials & equipment received do not conform to project quality specifications...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Quality Assurance	Major	Minor
Inadequate management of change control resulting in late re-engineering work...	Offshore - Green Fl...	Oil & Gas	South East Asia	Detailed Design	All	Engineering	Severe	Minor
Modules or equipment misaligned or dropped during heavy lift operations, result...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	HSE	Severe	Minor
Failure of existing marine systems due to inadequate preservation and late re-e...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	FPSO	Quality Assurance	Severe	Minor
Significant increase in commodity prices, resulting in global increase in demand f...	Offshore - Green Fl...	Oil & Gas	South East Asia	All	All	Procurement	Major	Minor
Lack of control of daily safety hazards, including: fires, dropped objects, confinement...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	HSE	Major	Minor
Variation order requests not approved by client as a result of late & uncontrolled...	Offshore - Green Fl...	Oil & Gas	South East Asia	Detailed Design	All	Contacts	Severe	Minor
Plant start-up prior to close-out of all SHEAMS registration actions, resulting in HSE L...	Offshore - Green Fl...	Oil & Gas	South East Asia	Operations	All	Management	Major	Minor
Multiple sites, locations and sub-contractors used for fabrication of plant modules...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Construction	Severe	Minor
Delay to production start-up as a result of as-built drawings and final documenta...	Offshore - Green Fl...	Oil & Gas	South East Asia	Operations	All	Operations	Moderate	Minor
Materials & equipment installed do not conform to project quality standards or s...	Offshore - Green Fl...	Oil & Gas	South East Asia	Commissioning	All	Quality Assurance	Severe	Minor
Inadequate preservation of materials and equipment during construction, resultin...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Construction	Major	Minor
Criminal groups operating on the open sea, resulting in an attempt to gain access...	Offshore - Green Fl...	Oil & Gas	South East Asia	Transport & Install...	Wellhead Platforms	HSE	Severe	Moderate
Lack of adherence to Class & Regulatory requirements, resulting in additional co...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	FPSO	Regulatory Compl...	Major	Minor
Delay in completion of anchor scope, resulting in carry-over of onshore scope to...	Offshore - Green Fl...	Oil & Gas	South East Asia	Hook-up & Compl...	All	Hook-up & Compl...	Severe	Minor
Simultaneous commissioning and construction work on-going and improperly co...	Offshore - Green Fl...	Oil & Gas	South East Asia	Commissioning	All	Management	Severe	Minor
Incomplete design, or errors in FEDD, resulting in late design changes during deta...	Offshore - Green Fl...	Oil & Gas	South East Asia	FEED	All	Engineering	Major	Minor
Supplied module weights exceed design allowances, resulting in support structur...	Offshore - Green Fl...	Oil & Gas	South East Asia	Construction	All	Construction	Severe	Minor
Inadequate preservation of risers during offshore installation, resulting in corrosio...	Offshore - Green Fl...	Oil & Gas	South East Asia	Transport & Install...	Wellhead Platforms	Transport & Install...	Major	Minor
Loss of control in transferring and accommodating additional personnel and equal...	Offshore - Green Fl...	Oil & Gas	South East Asia	Hook-up & Compl...	All	Operations	Severe	Minor

Screen Shot 18 – Public Risk Directory

## 11 Reports

The application produces a customisable dashboard report as well as 36 individual drill-down reports for each project as follows:

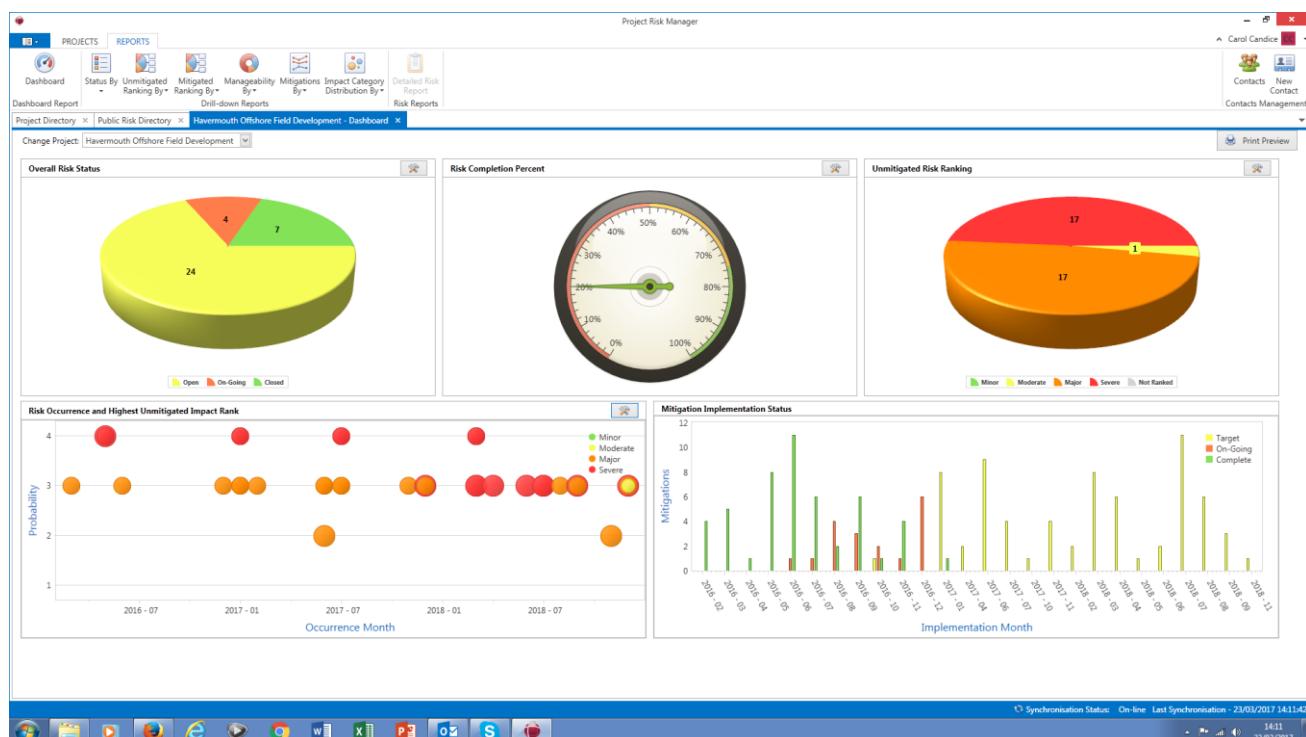
### 11.1 Dashboard Reports

Dashboard reports are scaled to fit on either A4 or A3 sized paper in landscape orientation and contain the following default charts:

- Overall risk status (3D pie chart)
- Risk completion percent (0 – 100% speedometer)
- Unmitigated risk ranking (3D pie chart)
- Risk occurrence and highest unmitigated impact rank (Bubble chart)
- Mitigation implementation status (Bar chart)

Four of the five dashboard charts are customisable by clicking on the toolbox icon located in the top right corner of each chart. Each of these four charts can be changed to one of the following alternative charts:

- Overall risk status (3D pie chart) can be changed to:
  - Overall mitigation status (3D pie chart)
- Risk completion percent (0 – 100% speedometer) can be changed to:
  - Mitigation completion percent (0 – 100% speedometer)
- Unmitigated risk ranking (3D pie chart) can be changed to:
  - Mitigated risk ranking (3D pie chart), or:
  - Risk manageability (3D pie chart)
- Risk occurrence and highest unmitigated impact rank (Bubble chart) can be changed to:
  - Risk occurrence and highest mitigated impact rank (Bubble chart)



Screen Shot 19 – Dashboard Report

## 11.2 Drill-down Reports

Drill-down reports are available for six different risk categories, being:

- Risk Status
- Unmitigated Ranking
- Mitigated Ranking
- Manageability
- Mitigations
- Impact Category Distribution

For each of these six categories, users may run reports for the following project resources:

1. Overall Project
2. Department
3. Phase
4. Facility
5. Risk Owner
6. Risk Bearer

## 11.3 Risk Detail Reports

Risk detail reports allow users to print out the details of selected risks, displaying all relevant information of each risk on a single page.