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MQP Level 2

MQP L2 Risk and Opportunity Management Procedure

This document describes the Risk and Opportunity Management (R&OM) process used by and applicable to the IO and the DAs.

This Risk and Opportunity Management procedure establishes a systematic approach to identifying, assessing, and addressing R&Os.

Approval Process			
	<i>Name</i>	<i>Action</i>	<i>Job Title / Affiliation</i>
<i>Author</i>	Chouchana M.	07 Apr 2026:signed	ITER Risk & Opportunity Mgmt Coordi...
<i>Co-Authors</i>	Dorschner C.	07 Apr 2026:signed	Contracts Risk manager
<i>Reviewers</i>	Izquierdo J.	09 Apr 2026:recommended	Deputy Head of Division
	Okayama K.	07 Apr 2026:recommended	Head of Division
	Sriram K. R.	08 Apr 2026:recommended	Head of Office
	Tiainen-Paquaux M.	07 Apr 2026:recommended	Quality Engineer
<i>Approver</i>	Grammatico L.	12 Apr 2026:approved	Head of Department
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Change Log			
MQP L2 Risk and Opportunity Management Procedure (22F4LE)			
Version	Latest Status	Issue Date	Description of Change
v1.0	Signed	25 Feb 2005	
v1.1	Approved	07 Mar 2005	
v2.0	In Work	05 May 2009	
v2.1	Approved	24 May 2009	
v2.2	Signed	08 Oct 2009	Document re-drafted and split into two documents 1. Management focus and 2. Practitioner focus. The latter document is Risk Assessors Handbook [IDM ref: ITER_D_2YRJG2 v 1.0]
v3.0	Signed	20 Jan 2011	<p>This new version incorporates the recent improvements proposed for the ITER risk process, which simplify the structure of the overall risk process and provide further clarity on the relationship to the other management processes, such as procurement arrangement, design review and project change control, while the Risk Assessors Handbook (3G3TH2) provides the details of the risk analysis methodologies and processes for the risk practitioners.</p> <p>Sections 1 and 2 of this document are designed to give an overview of the process and have been specifically targeted at Managers within the ITER Project. The remainder of the document is targeted at Responsible Officers who will be required to understand and use the risk process as necessary though with the assistance of the risk practitioners as needed.</p>
v3.1	Signed	07 Feb 2011	<p>Incorporated reviewer's comments:</p> <p>Alignment of Roles and Responsibilities with the new organization structure Update of the Reporting and Communication section</p>
v4.0	Revision Required	24 Oct 2014	<p>This update contains major changes from the previous version as follows.</p> <p>The previous Risk Management Plan contained descriptions and definitions of methodologies. It has been decided that such details should be described in the lower level document. A new Risk Management Procedure (Q4SQA2) has been developed. The majority of the contents in the previous version of Risk Management Plan have been moved into the newly created Risk Management Procedure (Q4SQA2).</p> <p>The IO organization and overall strategy (including roles and responsibilities) for project management and risk management have been changed since 2009. The latest strategy has been reflected in this new version.</p> <p>The previous version was issued (i.e. approved) in June 2009. The risk management practices have been evolved since then, which have been reflected in this new version and the new Risk Management Procedure (Q4SQA2). The inconsistency between the previous version and the actual practices such as the risk assessment matrix has been resolved.</p>
v4.1	Signed	15 Jun 2015	Reviewers' comments have been incorporated. The document has been refined in order to be aligned with the new IO (CT & DA) organization.
v4.2	Approved	15 Jul 2015	Reviewers' comments have been incorporated.
v5.0	Signed	21 Nov 2016	This new version incorporated 2016 changes in the ITER Project risk and opportunity management process. These changes to the process have been reviewed and approved at the monthly PROMC-WG meetings.
v5.1	Approved	30 Nov 2016	Incorporated reviewers' comments

v6.0	Signed	30 Mar 2017	Addition of language and tables to more fully cover opportunities Clarification of terminology for better alignment with the MQP Level 1 parent document, Project Management Plan Change Title to Risk and Opportunity Management Procedure Uploaded following MQP doc Request UFY88B
v6.1	Signed	04 Apr 2017	MQP L2 procedure for Project Control Office processes added under Scope.
v6.2	Signed	04 Apr 2017	Risk and Opportunity Management Procedure on template MQP Document Template (438T76 v2.4) (current)
v6.3	Approved	05 Apr 2017	All comments, changes accepted except: Comment 1 - definition of an issue. It is necessary to have a distinct boundary between issues and risks for clarity. Boundary is that a concern is not an issue unless it has happened, that it is a fact Comment 3 and 4 - Score of 8 was set by Hans. We would want to study how many risks would be affected by raising the "accept" bar to 16. We will put the suggestion of 16 in the folder we've already started for changes to the next version of the Risk and Opportunity Management Procedure. We expect a new version may be necessary to address comments by the IC independent assessment
v6.4	Approved	09 Oct 2019	As per approved MQP doc request https://user.iter.org/?uid=29E835 the changes are: MQP document updated with the new organization structure (see attachment with the track of changes)
v7.0	In Work	02 Apr 2026	1. Major change: The governance model, as agreed at 26/02/2025 EPB25-193 (DJN55Q + DJFDJL): establishment of the ROMB (DMLFCF + DUYS5G) and an agreed list of IO-DA representatives (DMHGDW). 2. Minor changes: Description and thresholds for schedule, cost impact and technical impact criteria (e.g. to reflect the potential impact of a risk on the ITER Research Plan) and clarifications on interactions with other processes
v7.1	Approved	07 Apr 2026	Minor editorial changes from version 7.0 1. Major change: The governance model, as agreed at 26/02/2025 EPB25-193 (DJN55Q + DJFDJL): establishment of the ROMB (DMLFCF + DUYS5G) and an agreed list of IO-DA representatives (DMHGDW). 2. Minor changes: Description and thresholds for schedule, cost impact and technical impact criteria (e.g. to reflect the potential impact of a risk on the ITER Research Plan) and clarifications on interactions with other processes

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1 Purpose

The purpose of this document, which forms part of the ITER Management and Quality Program (MQP) framework, is to describe the Risk and Opportunity Management (R&OM) process used by, and applicable to the ITER Organization (IO) and the Domestic Agencies (DAs).

This Risk and Opportunity Management procedure establishes a systematic approach to identifying, assessing, and addressing R&Os with the objectives to:

- Ensure that potential threats to ITER Project objectives and safety requirements are proactively managed and promote informed decision-making in this regard.
- Enable the organization to capitalize on opportunities that enhance performance and innovation.
- Strengthen the effectiveness and efficiency of the ITER quality management system.

2 Scope

This document shall be used by all IO and DA resources involved in R&OM processes.

Anyone working for the ITER Project is empowered to suggest recording of potential risks and opportunities, and can, therefore, contribute to the R&OM Process (see Figure 1 below). Further, those accountable for meeting ITER Project's objectives and safety requirements shall embed R&OM in their management and work plans and in the execution of their respective activities.

In respect of the DAs, this document is a Procurement Arrangement Applicable Document (PA-AD): for each PA, the DA is expected to share the Risks and Opportunities (R&Os) which may impact beyond its single organization authority level (i.e. only Project level R&Os and not R&Os which are to be managed internally by the DAs (e.g. cost increase, commercial / legal risks)).

Contractors executing work on the ITER site are expected to have their own appropriate procedure for their Risks and Opportunities activities.

The process and actions defined within this Level-2 MQP Procedure or any related work instructions, shall be aligned with the principles described in the Level-0 MQP ITER Project Management Plan (PMP) [1]. Each DA may define and implement its own detailed R&OM working instruction(s) which shall be consistent with this Procedure.

3 General principles

Risks and Opportunities, as per the scope of this procedure, arise when uncertainty, complexity or lack of knowledge could impact achievement of the project's objectives and/or meeting safety requirements. These may come from within the organization (IO and/or DAs) or from external factors.

This R&OM Procedure is based on industry standards such as those issued by the Project Management Institute and the International Organization for Standardization (ISO 31000:2018 Risk Management).

For the purposes of this document:

- a "Risk" is defined as an uncertain event that, if it were to occur, would negatively impact the achievement of the ITER Project's objectives and safety requirements.
- an "Opportunity" is defined as any potential occurrence that would positively impact the achievement of the ITER Project's objectives and safety requirements.

Recognizing that the implementation of the R&OM Procedure involves utilisation of ITER Project resources, the R&OM Procedure focuses on **significant** R&Os. Further, R&OM is a continuous process that applies throughout the ITER Project lifecycle, and the nature or profile of each R&O may evolve as the Project evolves. Currently, since the Project is in the Construction Phase, the primary focus of R&OM is on those R&Os for which response actions can be undertaken before the targeted date of Cryostat Closure.

4 Workflow

4.1 Flowchart

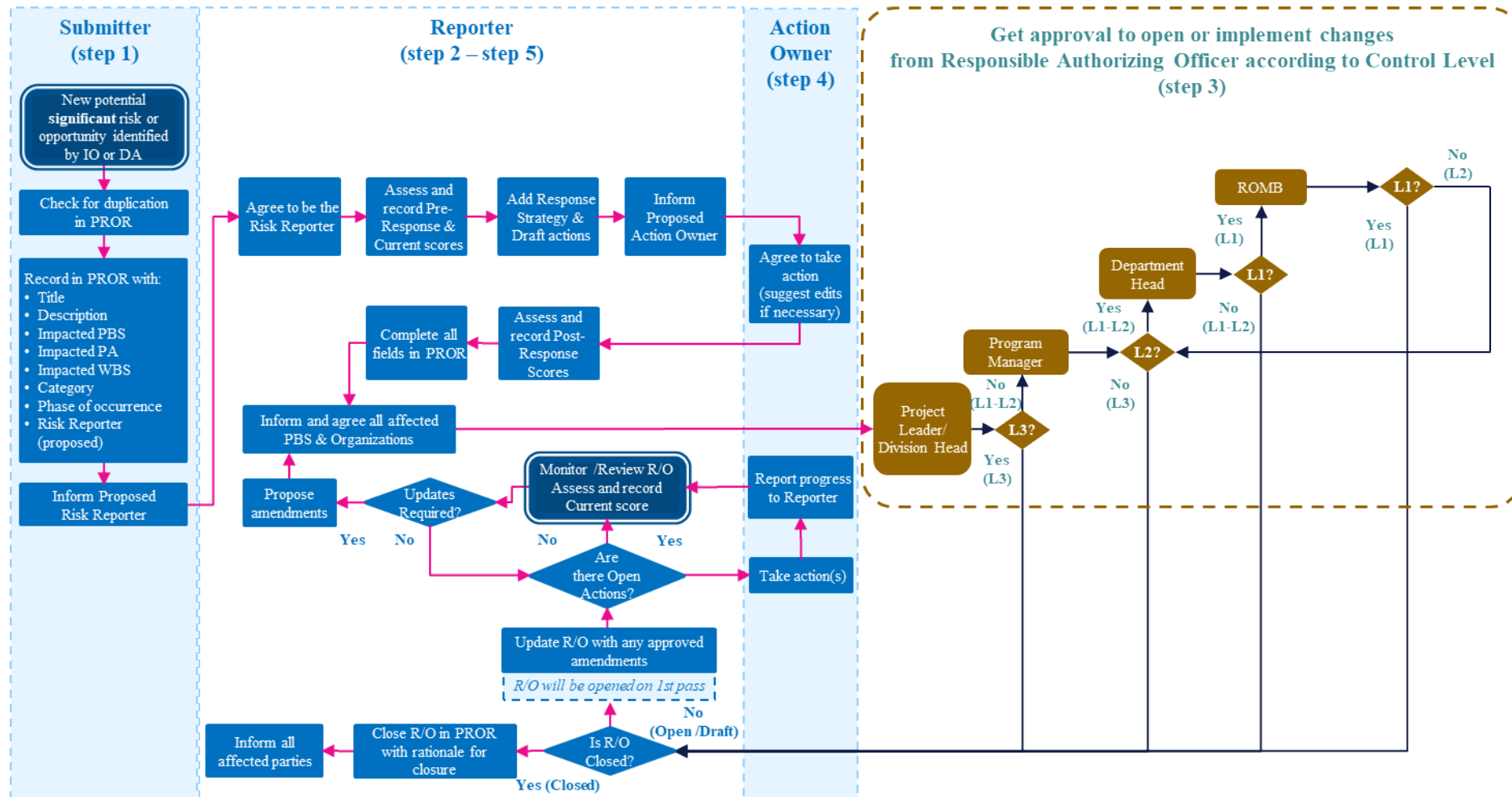


Figure 1. R&OM workflow

4.2 Description of R&OM steps

4.2.1 Step 1: Identify a potential significant Risk or Opportunity

After detection of a potential Risk or Opportunity, the first R&OM Step is to identify it with the aim to:

- Define the potential direct and/or indirect impact of the given Risk or Opportunity on the ITER Project's objectives.
- Categorise such impact(s) and record it to potentially occur during one of the ITER Project phases, i.e. Construction, Operation, Deactivation or Decommissioning [1].
- Identify which work scope(s) and/or area(s) could be impacted (PBSs, PAs, WBS).

R&O identification shall separate Cause(s) versus Event(s) versus Consequence(s) as indicated in the Table 1 below. All three components shall be clearly defined to ensure effective management and communication of R&Os.

Cause	Event	Consequence
<p>The underlying factors that lead to the uncertain event. These may include:</p> <ul style="list-style-type: none"> • Facts or background conditions; • Unusual or non-routine requirements; • Known problems or issues; • Assumptions or unknowns; • Multiple or single contributing factors. 	<p>The uncertain situation or occurrence that may or may not take place. It is triggered by the cause and is central to the analysis. Events require response actions and can lead to multiple consequences.</p>	<p>The potential impact of the event on project objectives. Consequences can be:</p> <ul style="list-style-type: none"> • Positive (opportunities) or negative (Risks); • Quantified or qualitatively defined by the range of possible outcomes; • Descriptive (e.g., explain additional costs or specific delays).

Table 1. R&O identification by separating Cause – Event – Consequence

4.2.2 Step 2: Assess the identified Risk or Opportunity

4.2.2.1 Scoring

An identified Risk or Opportunity shall be assessed in terms of:

- Likelihood of occurrence;
- Schedule impact;
- Cost impact; and
- Technical impact.

These assessments shall be performed using the 0-5 scale as defined in Table 2 below. Moreover:

- Each assessment shall be based on the “most likely” scenario;
- Only the cost directly related to the potential impact of the risk shall be considered; and
- Indirect costs like the impact of the occurrence of a risk on other activities, the cost of schedule delay, etc. shall be excluded.

The definition of the technical impact criteria is linked with the impact on the ITER Research Plan [11], with a focus on the next coming Scientific Phase. The current focus is on Start of Research Operation (SRO) and First Deuterium-Tritium Phase (DT1). It will be revisited as per the Project progress in order to target Second Deuterium-Tritium Phase (DT2). In addition, it is assumed that no other systems are required for DT2 compared to DT1. If any risks impacting DT2 Phase emerged, they may be assessed using a deterministic approach.

		Risk	Opportunity
Likelihood of Occurrence	0	Negligeable (NIL)	
	1	Very Low (VL) - less than 10%	
	2	Low (L) - between 10% and 30%	
	3	Medium (M) - between 30% and 50%	
	4	High (H) - between 50% and 80%	
	5	Very High (VH) - more than 80%	
Schedule Impact	0	Negligeable (NIL)	
	1	Very Low (VL) - Less than 1 week	Very Low (VL) - Less than 1 week
	2	Low (L) - Between 1 to 12 weeks	Low (L) - Between 1 to 4 weeks
	3	Medium (M) - Between 3 to 6 months	Medium (M) - Between 1 to 3 months
	4	High (H) - Between 6 to 12 months	High (H) - Between 3 to 6 months
	5	Very High (VH) - More than 12 months	Very High (VH) - More than 6 months
Cost Impact¹	0	Negligeable (NIL)	
	1	Very Low (VL) - Less than 1 M€	Very Low (VL) - Less than 0.1 M€
	2	Low (L) - Between 1 M€ to 20 M€	Low (L) - Between 0.1 M€ to 2 M€
	3	Medium (M) - Between 20 M€ to 50 M€	Medium (M) - Between 2 M€ to 5 M€
	4	High (H) - Between 50 M€ to 200 M€	High (H) - Between 5 M€ to 20 M€
	5	Very High (VH) – More than 200 M€	Very High (VH) – More than 20 M€
Technical Impact	0	Negligeable (NIL)	
	1	Some requirements (system or component) may not be met, without impacting the operation mode in SRO or DT1 or impacting operation only in DT2	Not applicable
	2	ITER Research Plan will be adversely affected (degraded operation mode) in DT1	
	3	ITER Research Plan will be adversely affected (degraded operation mode) in SRO	
	4	ITER Facility cannot be operated in DT1 phase	
	5	ITER facility cannot be operated in SRO	

Table 2. Four R&O assessment criteria, all to be evaluated on scale: 0-5

¹ The calculation of such cost impact is just a calculation, and in the IO, this does not, by itself, lead to or trigger an allocation of contingency from the DG/ Department Head.

As indicated in the Figure 2 below, the scaled assessment shall lead to an Overall Rating, which shall be calculated using the given formula and directly recorded as such in the Project Risk and Opportunity Register (PROR [5]).

$$\text{Formula: Overall Rating} = \text{Probability Score} \times \text{Max} \{ \text{Schedule Impact Score, Cost Impact Score, Technical Impact Score} \}^2$$

Likelihood of Occurrence	RISKS					OPPORTUNITIES				
	5	4	3	2	1	1	2	3	4	5
5	5	20	45	80	125	125	80	45	20	5
4	4	16	36	64	100	100	64	36	16	4
3	3	12	27	48	75	75	48	27	12	3
2	2	8	18	32	50	50	32	18	8	2
1	1	4	9	16	25	25	16	9	4	1
	1	2	3	4	5	5	4	3	2	1
	Max {Schedule Impact Score, Cost Impact Score, Technical Score}									

Figure 2. R&O scoring & rating matrix

Each Risk or Opportunity is assessed in the following three situations:

1. **Pre-Response Assessment:** the rating resulting from the initial assessment of a newly identified Risk or Opportunity. This rating shall not change during the lifetime of the Risk or Opportunity. It is used as a benchmark to assess progress or effect of response actions (detailed later in paragraph 4.2.4 of this document).
2. **Current Assessment:** the rating at the time of review. This assessment considers the current level of mitigation/enhancement and should change frequently during the lifetime of the Risk or Opportunity. It is used to show the potential impacts of the Risk or the Opportunity at the time of review.
3. **Post-Response Assessment:** this rating assumes that all approved response actions will be successfully completed. It changes when new actions are approved or when response actions taken have different results than anticipated. It is used to highlight Risk or Opportunity where there is insufficient mitigation or enhancement.

These three assessments allow understanding of:

- The progress of the Response Actions and whether they are as impactful as anticipated;
- The Risk exposure and benefit to the ITER Project from undertaking the Response Actions;
- Whether the planned actions are sufficient.

In exceptional cases (e.g. with regard to some risks relating to nuclear safety), it may not be practicable to develop a robust estimate of the likelihood of occurrence. In such situations, a normative (deterministic instead of probabilistic) approach could be adopted, and the overall rating of the risk could be based only on considerations of potential impact.

4.2.2.2 Schedule criticality flag

In order to reflect the unique governance of the ITER Project for the control of R&Os, the assessment also applies a flagging system shown in Table 3.

		Risk	Opportunity
Schedule criticality	Critical	Affects activities on the ITER Project's Critical Path	
	Near Critical	Affects activities near the ITER Project's Critical Path	
	Not Critical	Affects activities not near the ITER Project's Critical Path	

Table 3. Schedule criticality flag

4.2.3 Step 3: Management (governance) of a registered Risk or Opportunity

The schedule criticality flag, together with the scoring (see section 4.2.2 of this document), allows to cluster risks and opportunities into a hierarchy of Control Levels. The Control Levels are automatically calculated in [5] based on the methodology defined in the Risk Assessment Matrix [7]. However, the final control level is not determined solely by this calculation; it also requires a management decision and exercise of professional judgment.

To reflect and reinforce the accountability within the Project (including timely and effective Risk identification and review and effective mitigation actions), Three governance levels at which the R&O (and associated response actions) shall be managed have been defined (as illustrated in Figure 3 below).

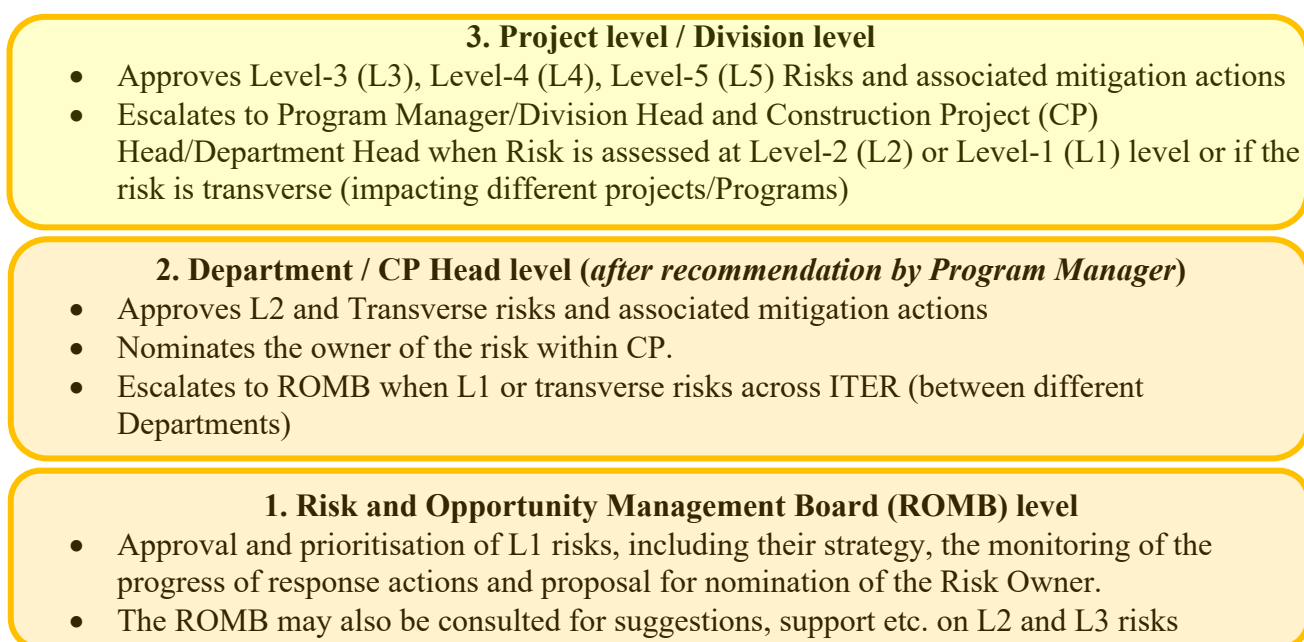


Figure 3. Management of R&Os at 3 governance levels

The ITER R&Os shall be reviewed on a regular basis through:

- Monthly reviews for L1 R&Os with escalation to the Risk and Opportunity Management Board (ROMB) [3].
- Quarterly reviews for lower Control Level R&Os.

4.2.4 Step 4: Plan and implement a Response Action

The next step consists in planning response actions according to the response strategy. Four Risk-response strategies and four Opportunity-response strategies have been defined for the ITER Project. See Table 4 and Table 5 below.

Risk Strategy	Description	Effect on Scores	Manage Using
Mitigate	Risk per se is acceptable but current Risk impact is not. Use response actions to reduce the probability of occurrence and/or impact. Response actions should be SMART: Specific, Measurable, Assignable, Realistic and Time-bound.	Reduces Risk probability and/or impact.	Response (mitigation) Actions. Fallback /Recovery actions.
Avoid	Reduce the probability of occurrence and/or impact to zero.	Reduces Post Response scores to zero.	Response (mitigation) Actions.
Transfer ²	Transfer the identified Risk to an organization who is better able to manage it. A new strategy must be defined after the transfer.	None.	Create Response Action to transfer the Risk.
Accept	The impact of the Risk is low enough that it is more cost effective to accept the Risk than it is to expend resources reducing it. Note: Completing all Response Actions is not a valid reason to automatically accept a Risk.	None. Current and post response scores will stay the same.	Control measures (e.g. procedures, standard practice). Fallback /Recovery actions.

Table 4. Four alternative response strategies for Risks at ITER Project

Opportunity strategy	Description	Effect on Scores	Manage Using
Enhance	Undertake actions that will make the Opportunity more likely to occur or increase the effect it may have. (the counterpart to mitigate for Risk)	Increases Post Response Probability and/or Impact increased.	Response Actions.
Exploit	Undertake actions that will definitely make the Opportunity occur. (the counterpart to avoid for Risk)	Increases Post Response Probability to 100%.	Response Actions.
Share	Share the identified Opportunity to an organization who is better able to manage it. A new strategy must be defined after the transfer. (the counterpart to transfer for Risk)	None.	Create Response Action to transfer the Opportunity.
Ignore	Take no action; there is no cost-effective mitigation worth /possible to take. (the counterpart to accept for Risk)	None.	N/A.

Table 5. Four alternative response strategies for Opportunities at ITER Project

² The appropriateness of the “Transfer” strategy for a specific Risk should be considered carefully to assess whether the “transferee organization” is indeed better able to manage this Risk. For example, even if the Risk is formally transferred to an external contractor, it is possible that the impact of such a Risk may ultimately devolve to the IO and/or DAs.

The resources (budget expenditure, schedule time, requirements) of the undertaking response action(s) shall be weighed against the impact of the Risk or the Opportunity as outlined in R&O Cost Benefit Analysis Guide [4].

4.2.5 Close a Risk or Opportunity in the active Project Risk and Opportunity Register

Open R&O should be closed when:

- They cannot occur anymore e.g. when the schedule activity they are associated with is complete; or
- There will be no impact to the ITER Project's objectives if they occur; or
- If a Risk has occurred which makes it an issue and consequently shall be managed as such (or if an Opportunity is fully implemented).

Mere completion of all Response Actions shall not be considered as a valid rationale to close a R&O. To close a Risk or Opportunity in the PROR, the rules indicated in 6 below shall be respected.

R&O Status	Individual authorized to close R&O
Open	Authority corresponding to its Governance Level (see Figure 3).
Draft	R&O Submitter or Reporter (if identified).

Table 6. Individuals authorised to close R&O depending on the R&O status (draft / open)

One of the three rationales as indicated in 7 below shall be associated to the closure of a R&O.

Rationale for closure	Description
Retired	The R&O can no longer occur or have no effect if it does.
Materialized	The R&O has occurred (probability is 100% - it is now an issue).
Cancelled	The R&O is not valid, i.e. it is based on incorrect assumptions or is a duplication.

Table 7. Three optional rationales for the closure of a R&O

The rationale shall be provided in the PROR at the closure of a R&O.

5 Specific principles

5.1.1 Parent-Child relationship (families) between R&Os

R&Os may have complex interdependencies. The Parent-Child relationship refers to a hierarchical structure to categorize “main R&Os” and “sub-R&Os” as indicated in Table 8 below.

Hierarchical structure of R&O	Description
Parent R&O	<ul style="list-style-type: none"> • A high-level or overarching R&O that encompasses one or more related or contributing R&Os (called Child R&Os). • Represents a broader category or grouping of R&Os.
Child R&O	<ul style="list-style-type: none"> • A specific or detailed R&O that contributes to or is a component of a Parent R&O. • May be managed by different organizational units and may have different R&O Reporters. • Helps in identifying root causes or specific triggers.

Table 8. Hierarchical structure of R&O (Parent-Child relationship)

Recognizing Parent-Child relationships allows a more comprehensive understanding of the R&Os, facilitates communication, assessment and definition of response planning: R&O responses can be tailored more effectively by targeting the root causes represented by Child R&Os.

Two types of Parent-Child relationships are defined to support effective oversight:

1. **Common consequence relationship:** multiple distinct R&Os, each with different causes and mitigation strategies, lead to the same secondary event.
 - Example: helium leaks, air leaks, and water leaks may all result in loss of vacuum.
2. **Identical R&Os across multiple areas:** the same R&O appears in multiple technical areas, making it practical to manage or report them collectively.
 - Example: risks associated with Transverse Functions (requirements related to the physical and functional integration of a system or a part of a system in its environment) such as Fire Protection, Radwaste Management, Heat Loads, etc.), Tritium permeation into cooling water risk. Each impacted area may maintain specific Child R&O(s), while a general Parent R&O is tracked at the management level.

Parent R&O score should reflect all associated Child R&Os and in general, shall be equal to or higher than the highest Child R&O control level.

The most complex Parent-Child “families” can be managed using a Risk Map.

6 Responsibilities

Potential R&Os can be detected and reported for identification by anyone; however, the Table below defines specific responsibilities for the R&OM process per category of people.

Stakeholders	Responsibilities
Chair of the ROMB [3]	<ul style="list-style-type: none"> • As per [3]. • Has the authority to make decisions on R&Os which affect the ITER Project as a whole. • Escalate, with the approval of the DG, to the ITER Council if R&Os are beyond the DG’s delegated powers.
DA Heads	<ul style="list-style-type: none"> • Develop and Implement a R&OM process consistent with this R&OM Procedure. • Ensure escalation according to the rules set forth in the R&OM Procedure where the impact of R&Os or the magnitude of their response plans are beyond the DA’s delegated power.
Members of the ROMB [3]	<ul style="list-style-type: none"> • Review high-level Risks as per [3].
Responsible Authorizing Officer (RAO)	<ul style="list-style-type: none"> • As per [6]. • Accountable to ensure R&Os are identified, managed and reported according to this procedure. • Accountable to ensure that R&Os are regularly reviewed and monitored at all levels.

Stakeholders	Responsibilities
	<ul style="list-style-type: none"> For R&Os commensurate with their authority level, make decisions regarding associated actions and time frames and that R&Os are appropriately escalated as required.
IO & DA Responsible Officers	<ul style="list-style-type: none"> Responsible Officers (ROs) have overall responsibility for identifying, recording, reporting and managing R&Os related to their area of responsibility. Both IO and DA Responsible Officers (ROs) have the responsibility to work together to identify, record, report and manage R&Os associated with each Procurement Arrangement (PA). Ensure that all relevant affected persons are informed and engaged for major changes to significant R&Os.
MQP Process Owner	<ul style="list-style-type: none"> Ensure industry best practices for R&OM are implemented within the ITER Project. Advise stakeholders on R&OM matters.
R&OM Officers	<ul style="list-style-type: none"> Develop and maintain the R&OM process through regular R&O reviews. Provide training, advice and support on the implementation and ongoing use of the R&OM process. Perform quantitative/qualitative Risk analysis as necessary.
R&O Submitter	<ul style="list-style-type: none"> Identify new potential R&O and check to avoid duplication in the PROR. Record the R&O in the database. Propose a R&O Reporter and inform him/her.
R&O Reporter	<ul style="list-style-type: none"> Ensure any raised R&O follows this procedure. Ensure a Response Plan is created and implemented for R&Os requiring mitigation. Follow-up Response Plan actions and ensure they are executed. Ensure that all relevant affected persons are informed and engaged for major changes to significant R&O.
Action Owner	<ul style="list-style-type: none"> Responsible for undertaking the agreed action(s). Report its progress and effectiveness to the R&O Reporter and record it in the PROR.

Table 9. Special responsibilities within R&OM process by category of people

7 Records

All R&Os of the ITER Project shall be recorded and managed in the Project Risk and Opportunity Register (PROR [5]) as per the responsibility defined in Table 8. The PROR[5] is maintained by the IO's Information Technology unit (IT) and follows established protocols and requirements from the R&OM Process Owner. Information stored in the PROR is retained for the duration of the ITER Project.

8 Interactions with other processes

8.1 Risks versus Issues

This R&OM Procedure is intended for identifying, assessing and addressing Risks i.e. uncertain events that could occur. Once such an event has occurred or is certain (100% likely) to occur, it is no longer a risk and is an “issue”. Issues are managed in the ITER Project through a variety of tools.

One such tool is the Project Issue Management (PIM) Process [2], which is for handling project technical issues, usually of transverse nature, that have no other process to resolve them or for which the capacity of existing processes is not sufficient. PIMs may include project identified Risks that materialize as technical issues and risk mitigation actions of technical nature: the output from the R&OM process recorded in [5] for a materialized Risk may consequently be used as an input for the PIM.

Other tools for handling technical issues include:

- Chits from Design Gates (as per the Design Review Procedure), and Actions from Design Integration Reviews as per the Design Integration Review Procedure.
- Non-Conformities (as per the Procedure for Management of Nonconformities).
- Punch Items from Assembly & Installation, Commissioning and Operations.

8.2 R&OM and Business Continuity Procedure/ Emergency Response Alert Procedure

The procedure for Business Continuity Management in the IO is the ITER General Business Continuity Procedure [8]. Further, the IO Emergency Response Alert Procedure [19] defines the organization within the ITER Organization site in the event of an alert, an emergency or a crisis, originating internally or externally to the ITER site, and the behaviour that should be adopted by all parties concerned.

While this R&OM Procedure and the General Business Continuity Procedure/ Emergency Response Alert Procedure are related, their focus is different. The Business Continuity Procedure and Emergency Response Procedures focus on how to respond to disruptions or crisis that affect the ability of the IO to maintain or provide key services or to function “as normal”.

By contrast, the R&OM Procedure:

- is not focused on response actions after the occurrence of an event, but on mitigation actions to be undertaken in advance not just to respond but also to reduce the probability of occurrence.
- generally involves an understanding and assessment of the “Cause” that could lead to the uncertain event (i.e. Risk).

8.3 Interaction between the R&OM and other processes

The output from the R&OM process can be used as input to the Management Review process [10] and Design Review process [12].

The output from the R&OM process can be used as input to audit requests (Quality Audit Plan, Internal Audit Services, ad-hoc audit request).

9 Acronyms and Definitions

Term	Acronym	Definition
First Deuterium-Tritium phase	DT1	Details available in [11]
Second Deuterium-Tritium phase	DT2	Details available in [11]
Issue		An unfavourable event that has already materialized or is certain (100% likely) to occur.
Opportunity		An uncertain event that, should it occur, would have a positive effect on ITER project's objectives.
Plant Breakdown Structure	PBS	The entire ITER Facility, with all its hardware and software, is broken down into a hierarchy described by the Plant Breakdown Structure (PBS).
Procurement Arrangement	PA	For each in-kind procurement, a Procurement Arrangement (PA) document sets out the respective roles and responsibilities of the DAs and the IO.
Project Risk or Opportunity Register [5]	PROR	Database in which the output (i.e. Risks and Opportunities) from the R&OM process are recorded.
Risk		A threat or uncertain event that, should it occur, would have a negative impact on ITER Project's objectives.
Risk and Opportunity Management Board	ROMB	ToR [3] The ROMB is part of the ITER Project's approach to enhance the capability to manage Risks and Opportunities as part of the Baseline 2024 implementation, with a clear, fully integrated IO-DA process for identifying and prioritizing R&Os and the required response actions in a timely manner, within the current project constraints. The ROMB validates the validity, opening, updating, closing and periodic review of the Level-1 R&Os and the associated mitigation actions. It also steers and can be consulted to provide suggestions on the R&OM approach in respect of corresponding activities for the Level-2 and Level-3 R&Os.
Start of Research Operation	SRO	Details available in [11]
Work Breakdown Structure	WBS	The work scope comprising all work required to be completed in order to achieve the ITER Project's Objectives is clustered according to a hierarchical Work Breakdown Structure (WBS).

10 References

[1]	MQP L0 ITER Project Management Plan (PMP) (AVAMQG)
[2]	Project Issue Management Procedure (SSU96T)
[3]	Terms of reference for the Risk and Opportunity Management Board (ROMB) (DMLFCF)
[4]	Risk and Opportunity Cost Benefit Analysis Guide (T3DHN9)
[5]	Project Risk and Opportunity Register (https://confluence.iter.org/display/IORM/IO+Risks+and+Opportunities+Register+Home)
[6]	Financial Delegation Policy (CAF2XQ)
[7]	Risk and Opportunity Control Level (UCN67H)
[8]	ITER General Business Continuity Procedure (3XUSPF)
[9]	IO Emergency Response Alert Procedure (7LB8NY)
[10]	Management Review (FG2JSY)
[11]	ITER Research Plan (24QSG6)
[12]	Design Review Procedure (2832CF)