URBANIZED D2.1: Mission profiles, KPIs, assessment plan, List of vehicle requirements, design specifications and shared interfaces

Primary Author(s)

Related Work Package

Version/Status

issue date

Deliverable type

Dissemination Level

Project Acronym

Project Title

Project Website

Project Coordinator

Grant Agreement No.

Co-Authors

Reviewers

Document history

Copyright statement

Keywords

Executive summary

Table of contents

5.

6.

7.

List of figures

List of tables

1. Introduction

Subtask 2.3.1: Risk analysis

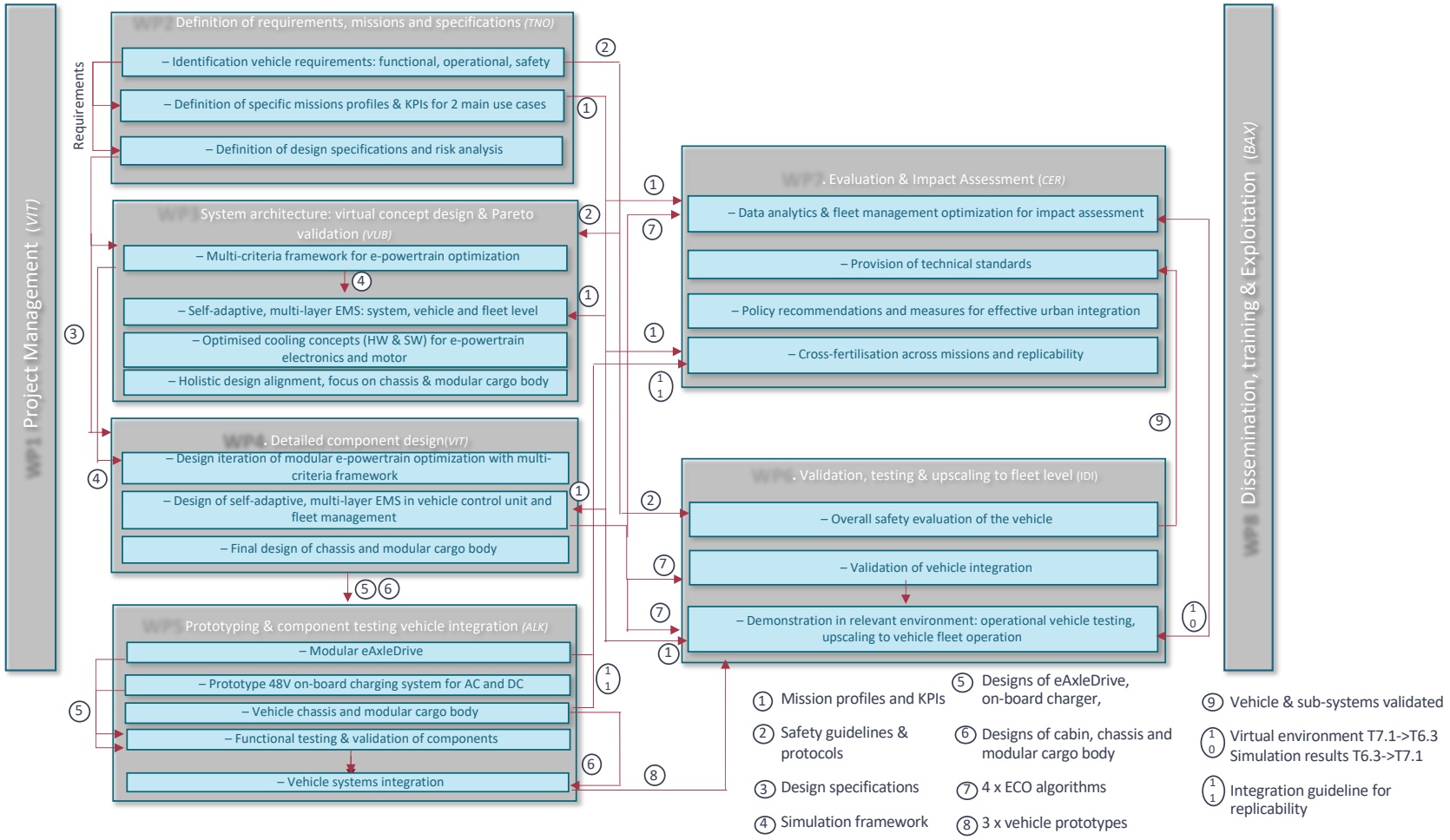


Figure 1: Overview of interconnection between the URBANIZED work packages and the position of WP2 in the project

2.Requirements Approach

2.1 Requirement levels

-
-
-

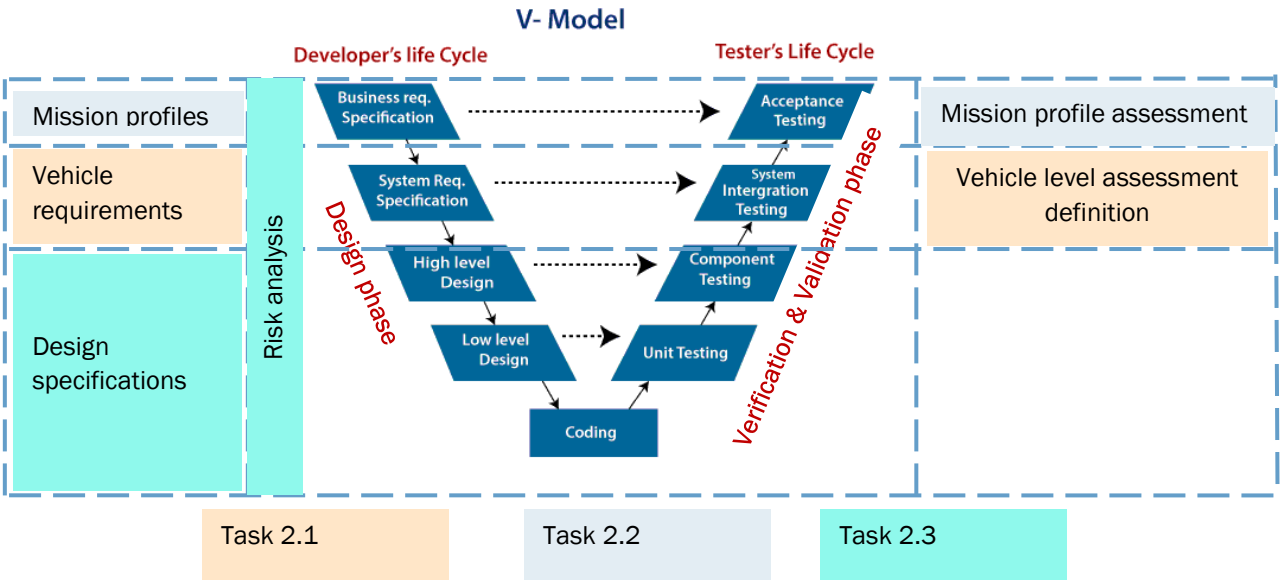


Figure 2: Use of requirements in the V-cycle

2.2 Requirements template

•

-
-
-
  -
  -
  -
-
  -
  -
  -
-
-
-
  -
  - *F*

-
-
-
-
-
-
-
-
-

-
-
-
-
-
  -
  -
  -

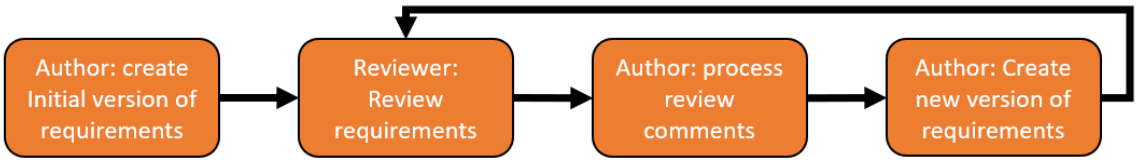


Figure 3: Workflow for requirements versioning

3. Mission Profile Requirements (MPR)

3.1 Detailed Requirements

3.1.1. MPR: Key Performance indicators (KPI)

Table 1: Key performance indicators on mission profile level

3.1.2.MPR: typical drive-cycle definition

Table 2: Typical drive-cycle requirements definition

	_____	
	_____	
	_____	

	F	

Mission Profile Generation tool

Road-profile generator

-

-

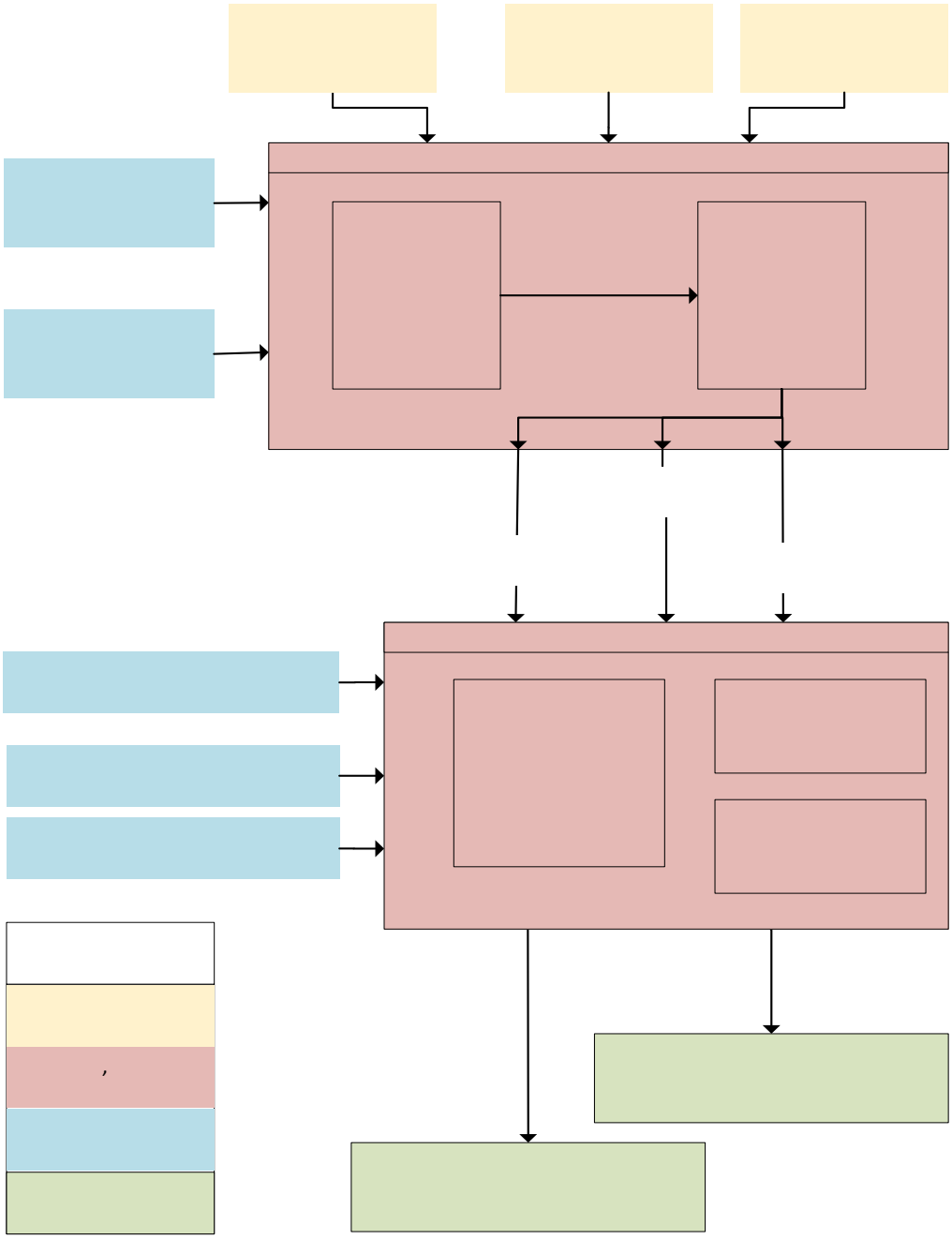


Figure 4: Mission Profile Generation (MPG) tool

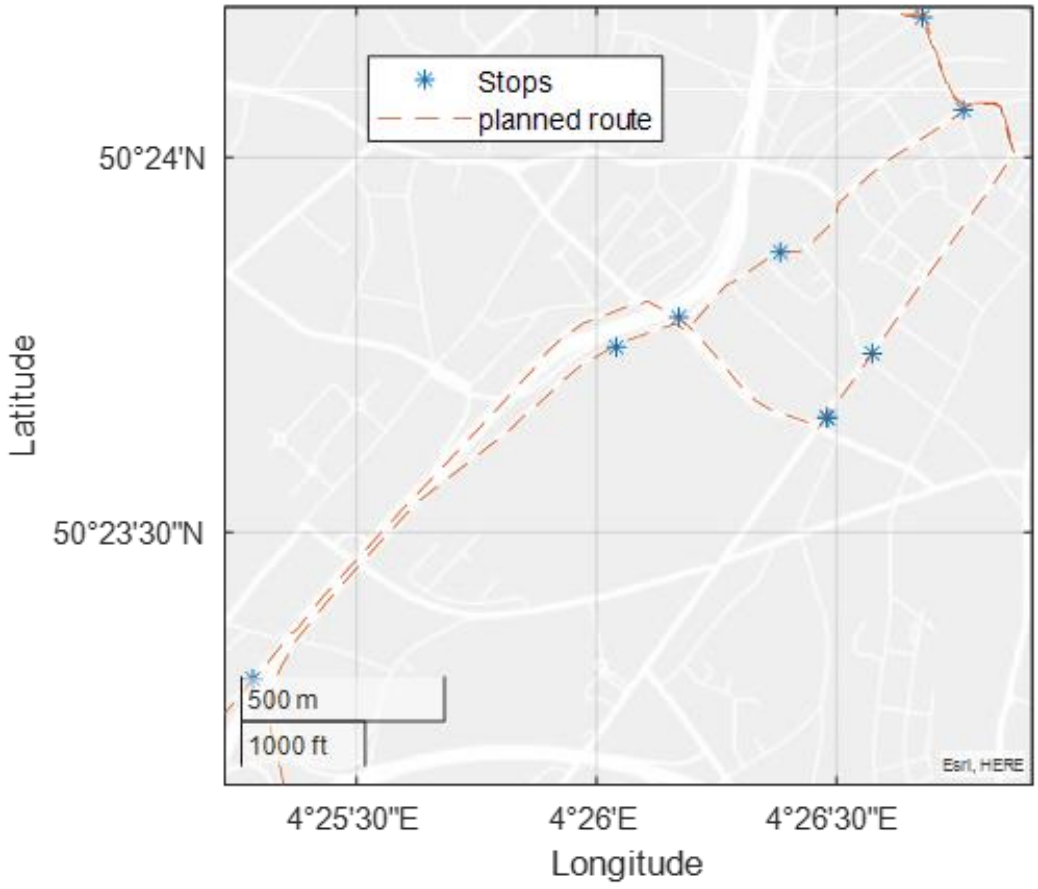


Figure 5: Route generation – Bpost

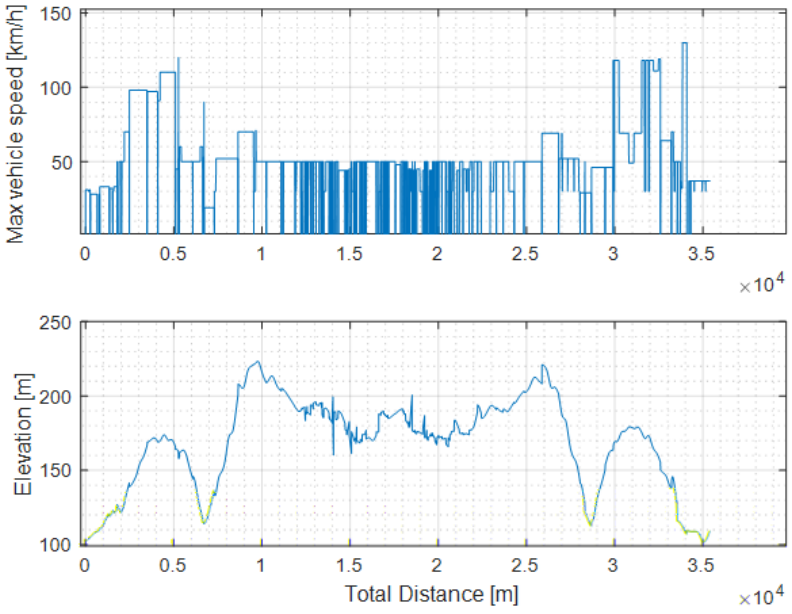


Figure 6: Road information - BPost

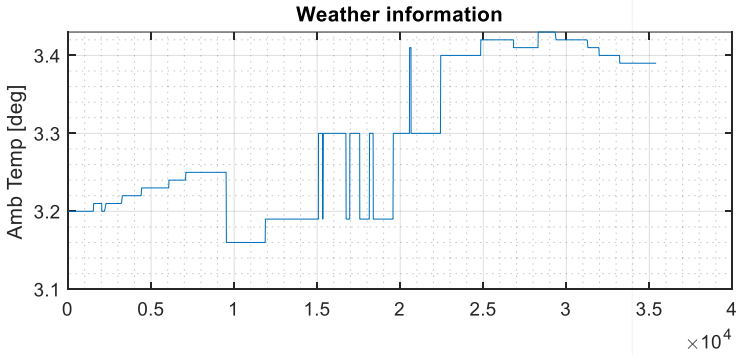


Figure 7: Weather information - BPost

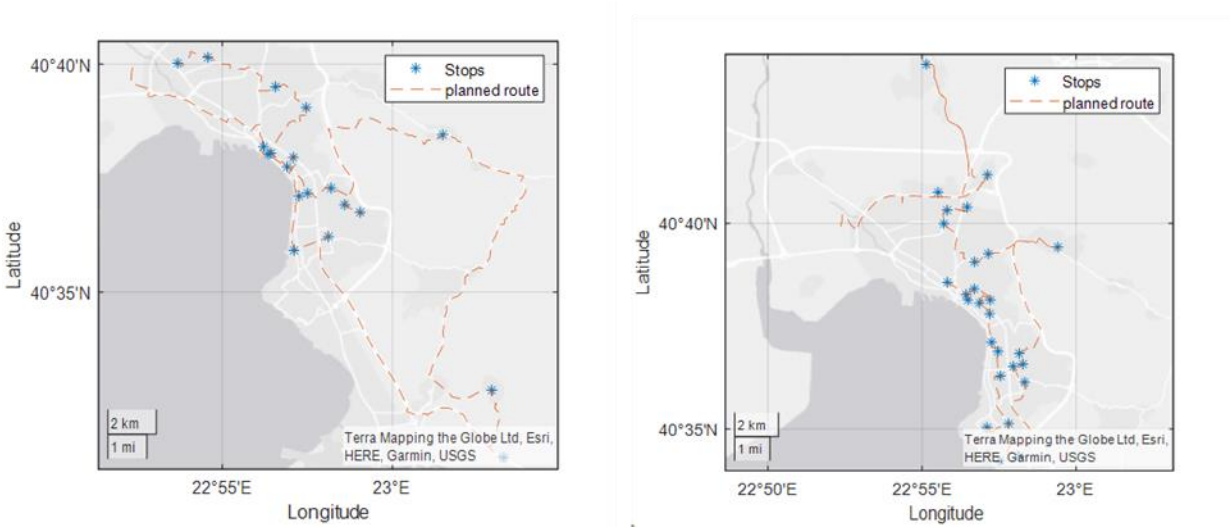


Figure 8: Route generation - Coffee Island

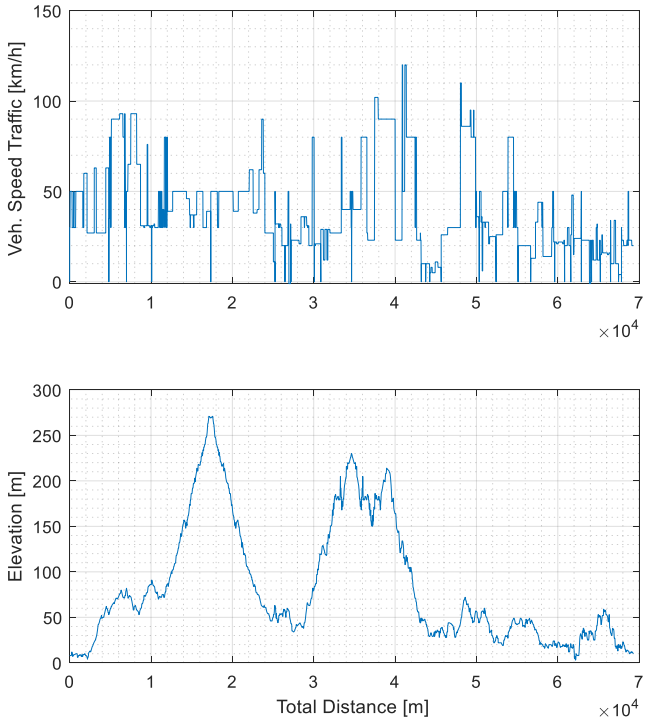


Figure 9: Road information - Coffee Island

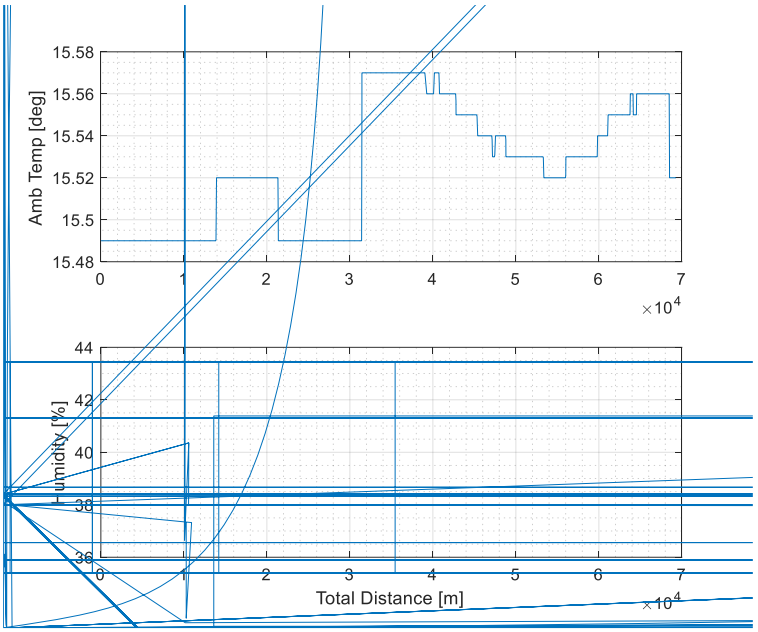


Figure 10: Weather information - Coffee Island

Vehicle simulator

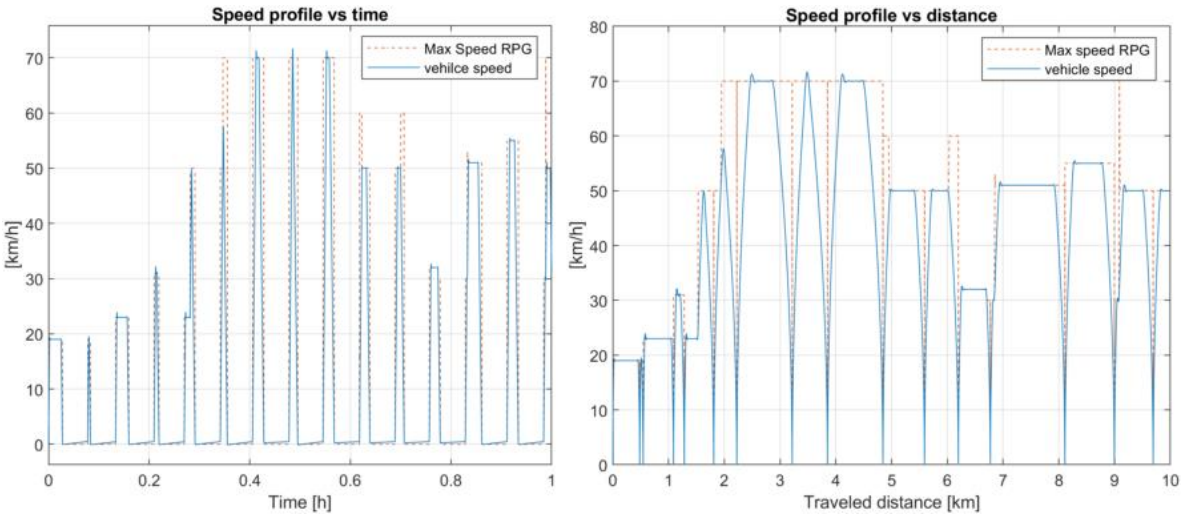


Figure 11: example of total vehicle speed generated with the mission profile generator. RPG stands for Route-Profile Generator

3.1.3.MPR: performance requirements

Table 3: Performance related requirements of MPR

3.1.4.MPR: other requirements

Table 4: Mission profile other requirements

3.2 Assessment plan

3.2.1.MPR: key performance indicators assessment

Table 5: key performance indicators assessment of MPR

3.2.2.MPR: typical drive-cycle assessment

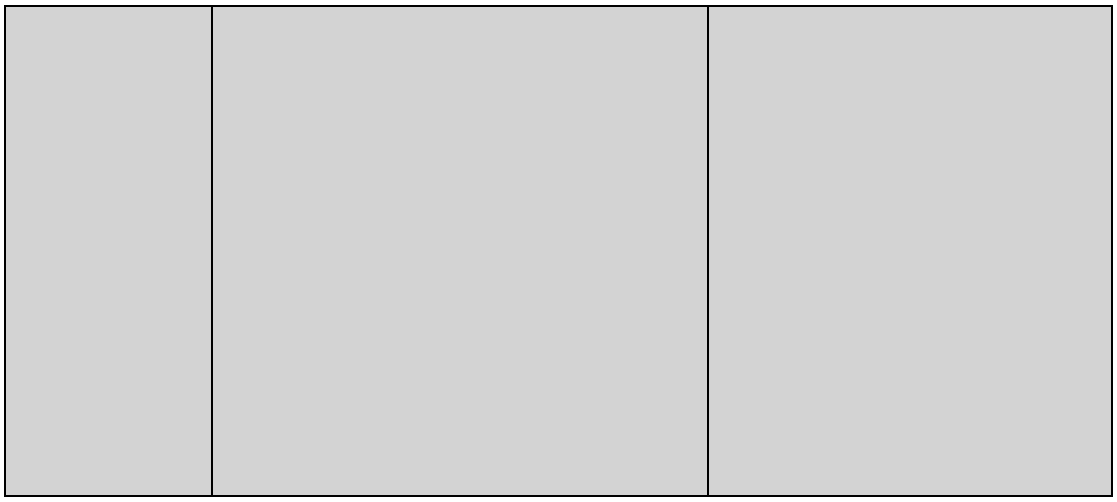
Table 6: Assessment of all the rows in the typical drive-cycle description of Table 2.

3.2.3.MPR: performance requirements assessment

Table 7: Assessment of performance requirements of the MPR

3.2.4.MPR: other requirements assessment

Table 8: Assessment of other requirements of the MPR.



4. Vehicle requirements (VR)

4.1 Requirements

4.1.1. Key performance indicators

Table 9: Key performance indicators on vehicle requirements level

4.1.2. Vehicle requirements related to main specs and performance

Table 10: Vehicle requirements related to main specs and performance

4.1.3. Vehicle requirements related to the front part of the vehicle

Table 11: Vehicle requirements related to the front part of the vehicle

4.1.4. Vehicle requirements related to cabin and comfort

Table 12: Vehicle requirements related to cabin and comfort

4.1.5.Vehicle requirements related to rear part of the vehicle

Table 13: Vehicle requirements related to the rear part of the vehicle

4.1.6.Vehicle requirements related to drivetrain and battery

Table 14: Vehicle requirements related to the drivetrain and battery

4.1.7. Vehicle requirements related to the modular cargo body

Table 15: Vehicle requirements related to the modular cargo body

4.1.8. Vehicle requirements related to the ICT platform and the Energy Management System

Table 16: Vehicle requirements related to the ICT platform and the Energy Management System

4.1.9. Vehicle requirements related to economic analysis and efficiency

Table 17: Vehicle requirements related to the economic analysis and the efficiency

4.2 Assessment Plan

4.2.1. Assessment of key performance indicators

Table 18: Assessment of key performance indicators on vehicle requirements level

4.2.2. Assessment of vehicle requirements related to main specs and performance

Table 19: Assessment of vehicle requirements related to main specs and performance

4.2.3. Assessment of vehicle requirements related to the front part of the vehicle

Table 20: Assessment of vehicle requirements related to the front part of the vehicle

4.2.4. Assessment of vehicle requirements related to cabin and comfort

Table 21: Assessment of vehicle requirements related to cabin and comfort

4.2.5. Assessment of vehicle requirements related to rear part of the vehicle

Table 22: Assessment of vehicle requirements related to the rear part of the vehicle

4.2.6. Assessment of vehicle requirements related to drivetrain and battery

Table 23: Assessment of vehicle requirements related to the drivetrain and the battery

4.2.7. Assessment of vehicle requirements related to the modular cargo body

Table 24: Assessment of vehicle requirements related to the modular cargo body

4.2.8. Assessment of vehicle requirements related to the ICT platform and the Energy Management System

Table 25: Assessment of vehicle requirements related to the ICT platform and the Energy Management System

4.2.9. Assessment of vehicle requirements related to economic analysis and efficiency

Table 26: Assessment of vehicle requirements related to the economic analysis and efficiency

5. Design specifications

5.1 Design specifications related to main specs and performance

Table 27: Design specifications related to the vehicle main specs and performance

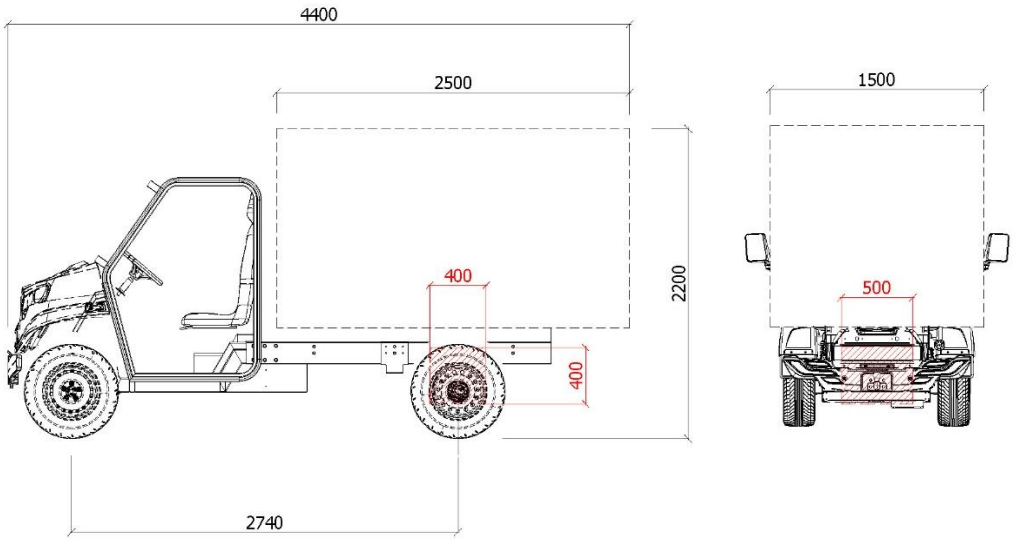


Figure 12: Location and available volume for the new powertrain

5.2 Design specifications related to the front part of the vehicle

Table 28: Design specifications related to the front part of the vehicle

5.3 Design specifications related to cabin and comfort

Table 29: Design specifications related to cabin and comfort

5.4 Design specifications related to rear part of the vehicle

Table 30: Design specifications related to the rear part of the vehicle

5.5 Design specifications related to drivetrain and battery

Table 31: Design specifications related to the drivetrain and the battery

5.6 Design specifications related to the modular cargo body

Table 32: Design specifications related to the modular cargo body

5.7 Design specifications related to the ICT platform and the Energy Management System

Table 33: Design specifications related to the ICT platform and the Energy Management System

5.8 Design specifications related to economic aspects

Table 34: Design specifications related to the economic aspects

5.9 Design specifications related to passive safety

Table 35: Design specifications related to passive safety

6. Risk analysis

6.1 Introduction

-
-
-

-
-

6.2 Methodology of URBANIZED risks analysis

6.2.1.Overview

-
-
-

6.2.2.The extended Failure Mode and Effects Analysis

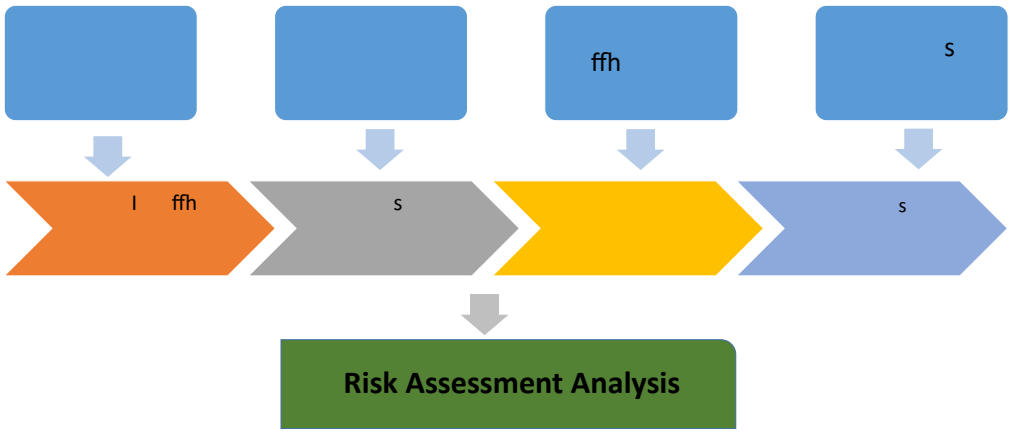
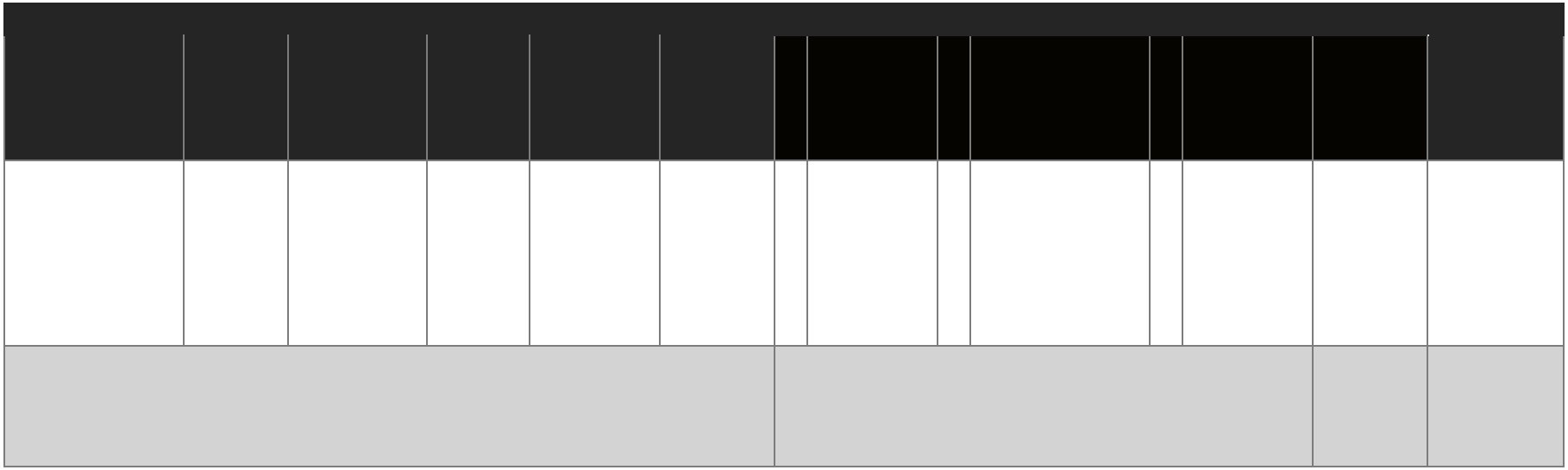


Figure 13: Extended FMEA proposed by (Bekiaris and Stevens 2005)



6.2.4. Risk analysis methodology steps

Step 1: Identification and definition of the risks

Step 2: Risk validation

Table 37: Technical risks

Table 38: Behavioural risks

Table 39: Legal risks

Table 40: Organizational risks

Step 3: Final risk validation number

$$RN = S \cdot O \cdot D$$

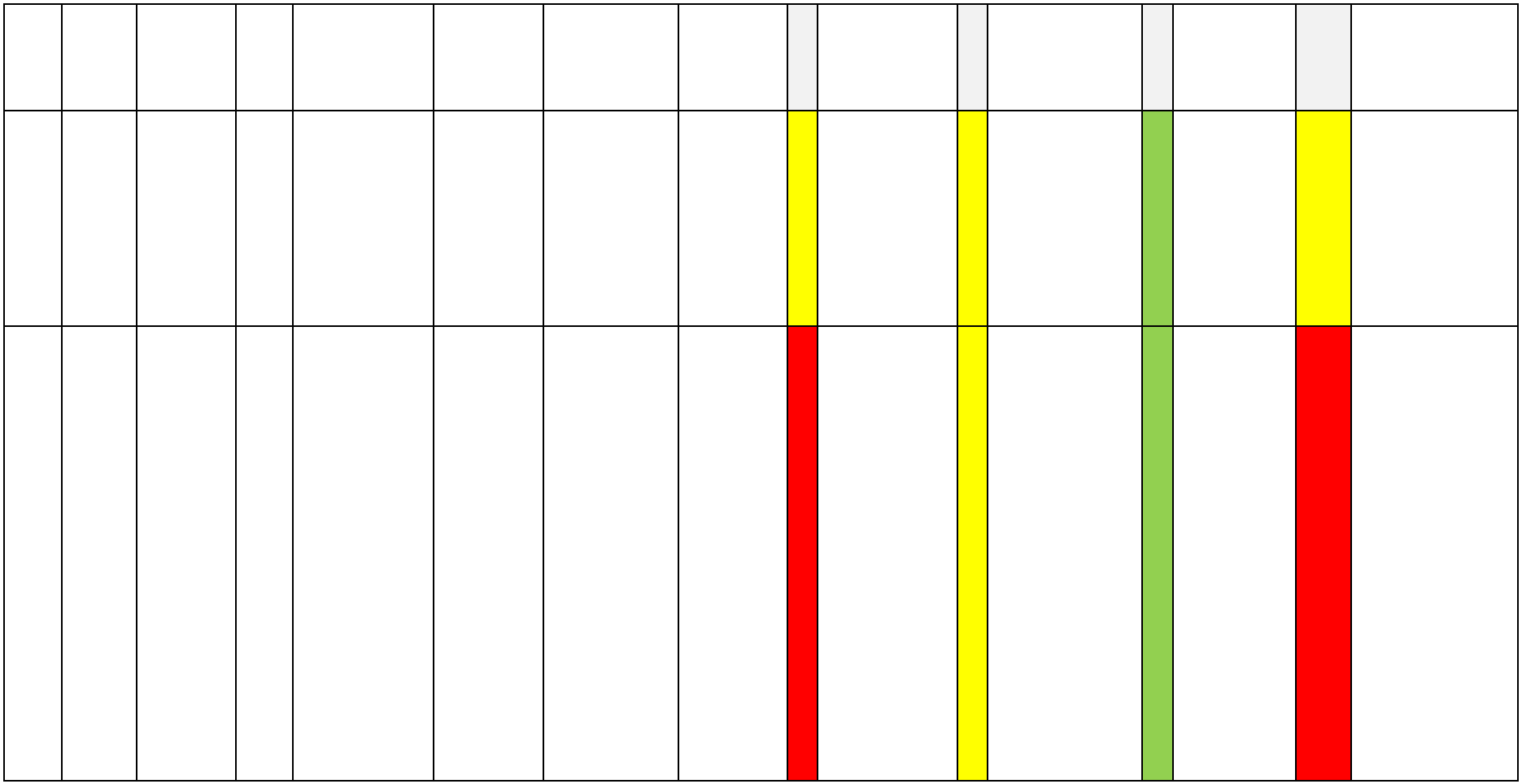
Table 41: Correlation of Overall risk factor with overall risk severity level

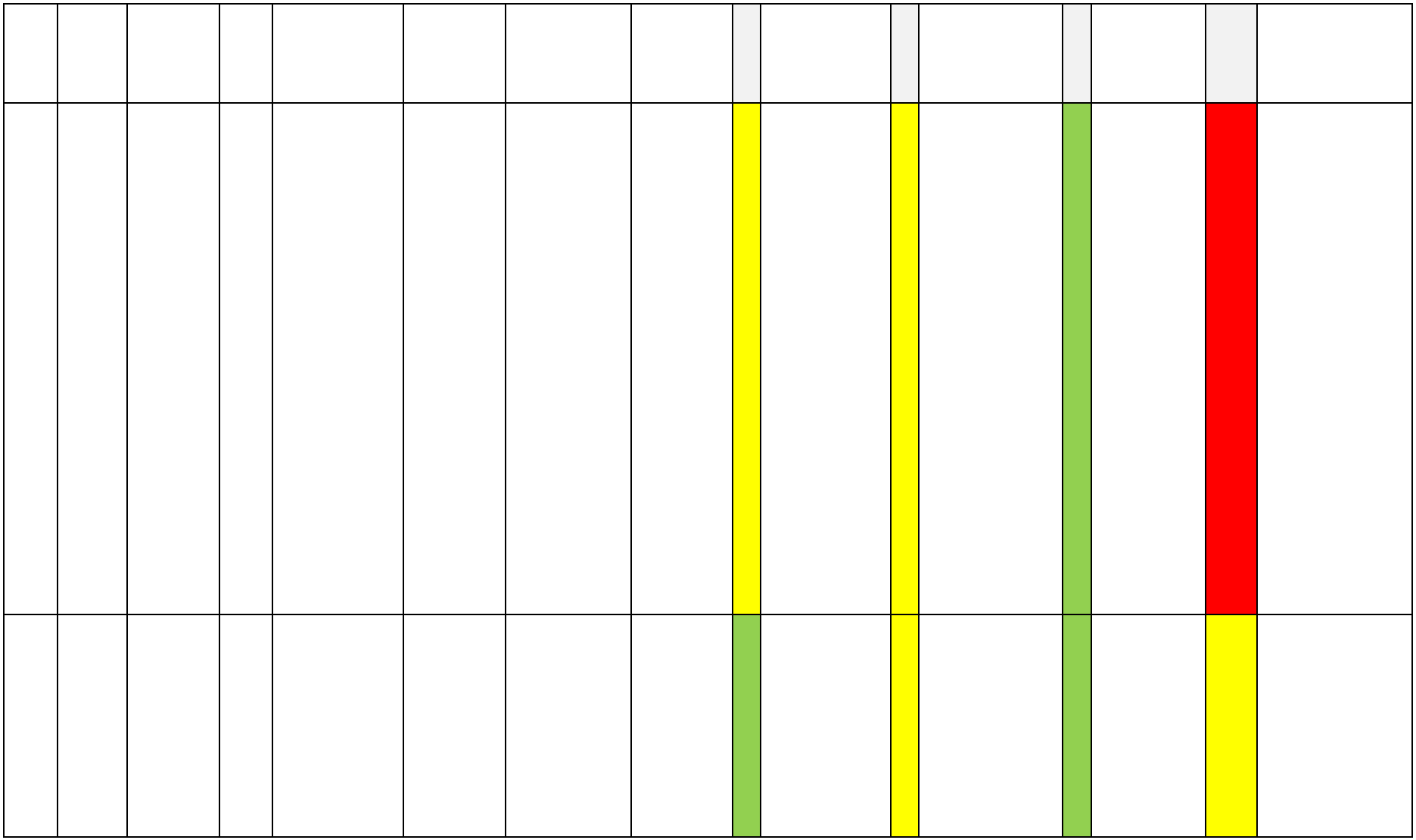
Step 4: Mitigation strategies identification

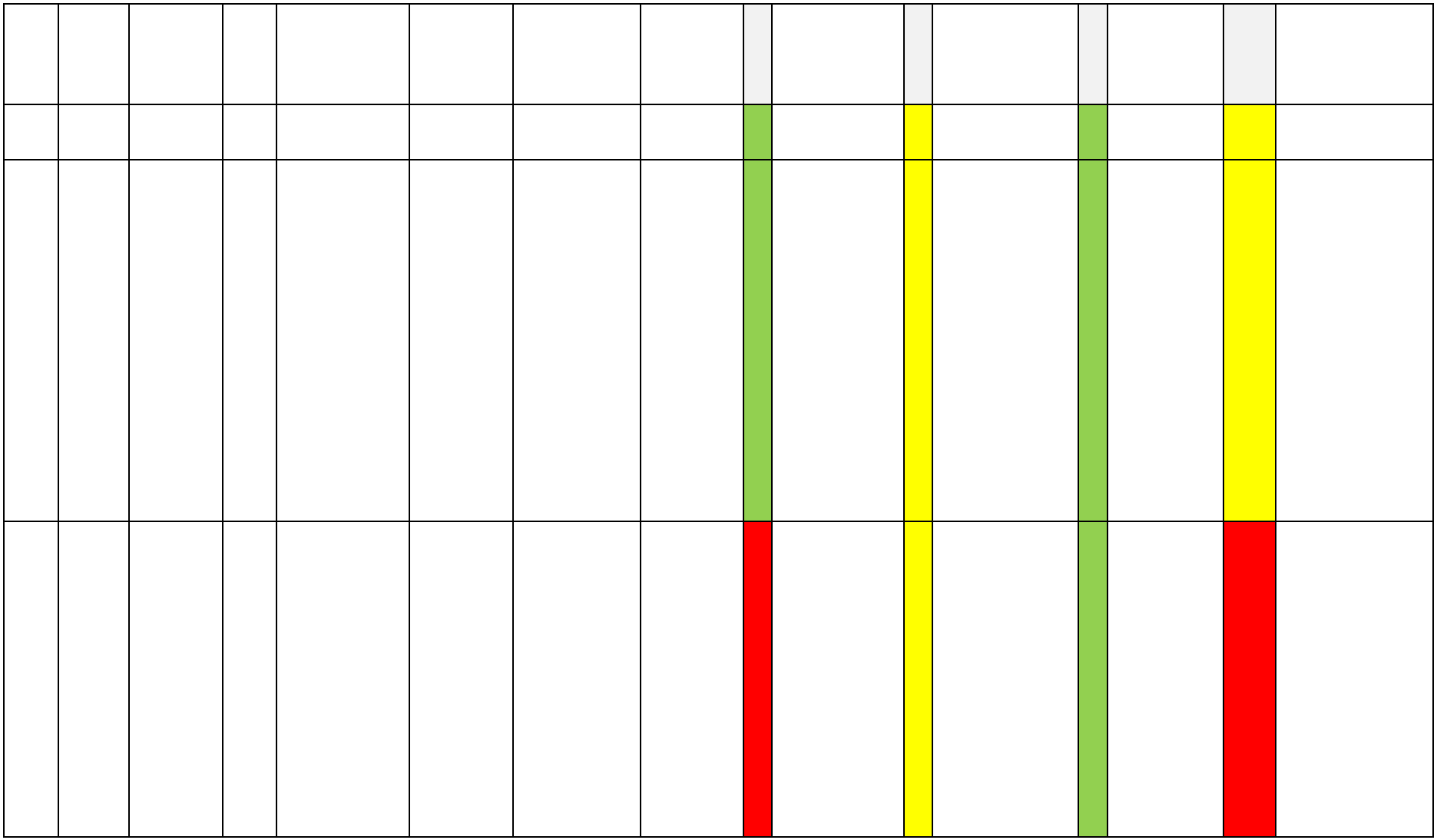
-
-
-
-

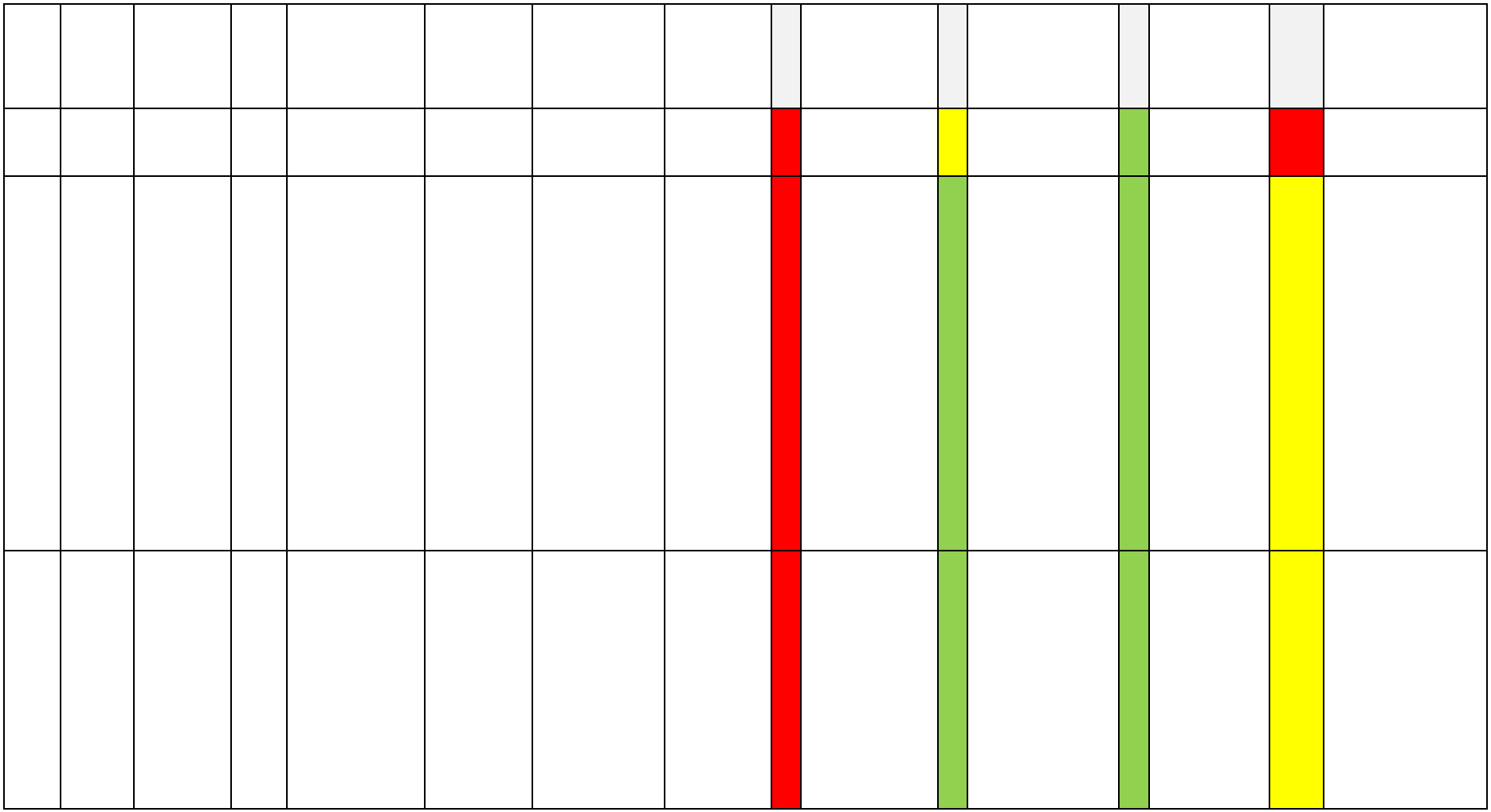
6.2.5. List of risks and mitigation strategies

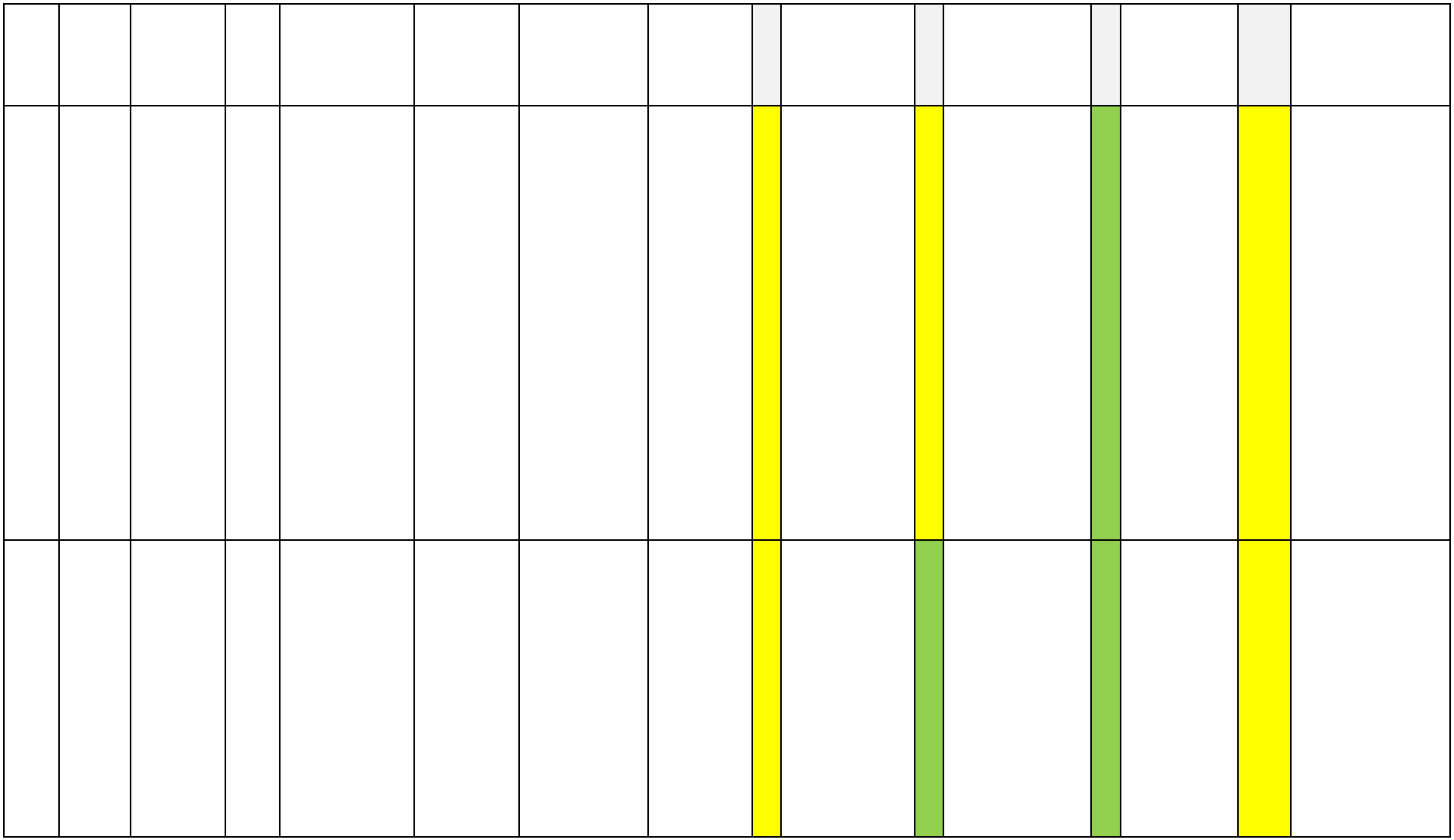
Table 42: List of risks and mitigation strategies

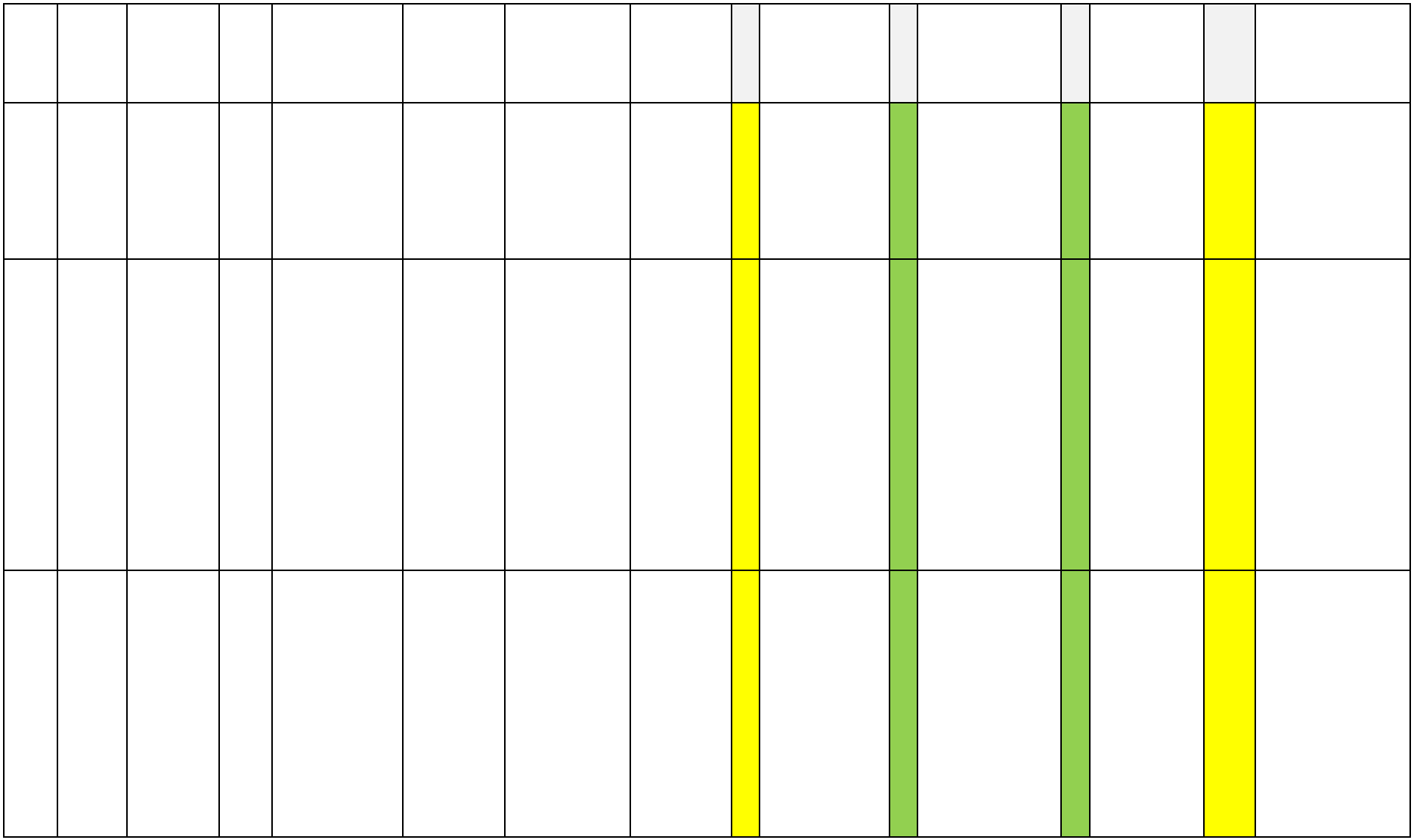


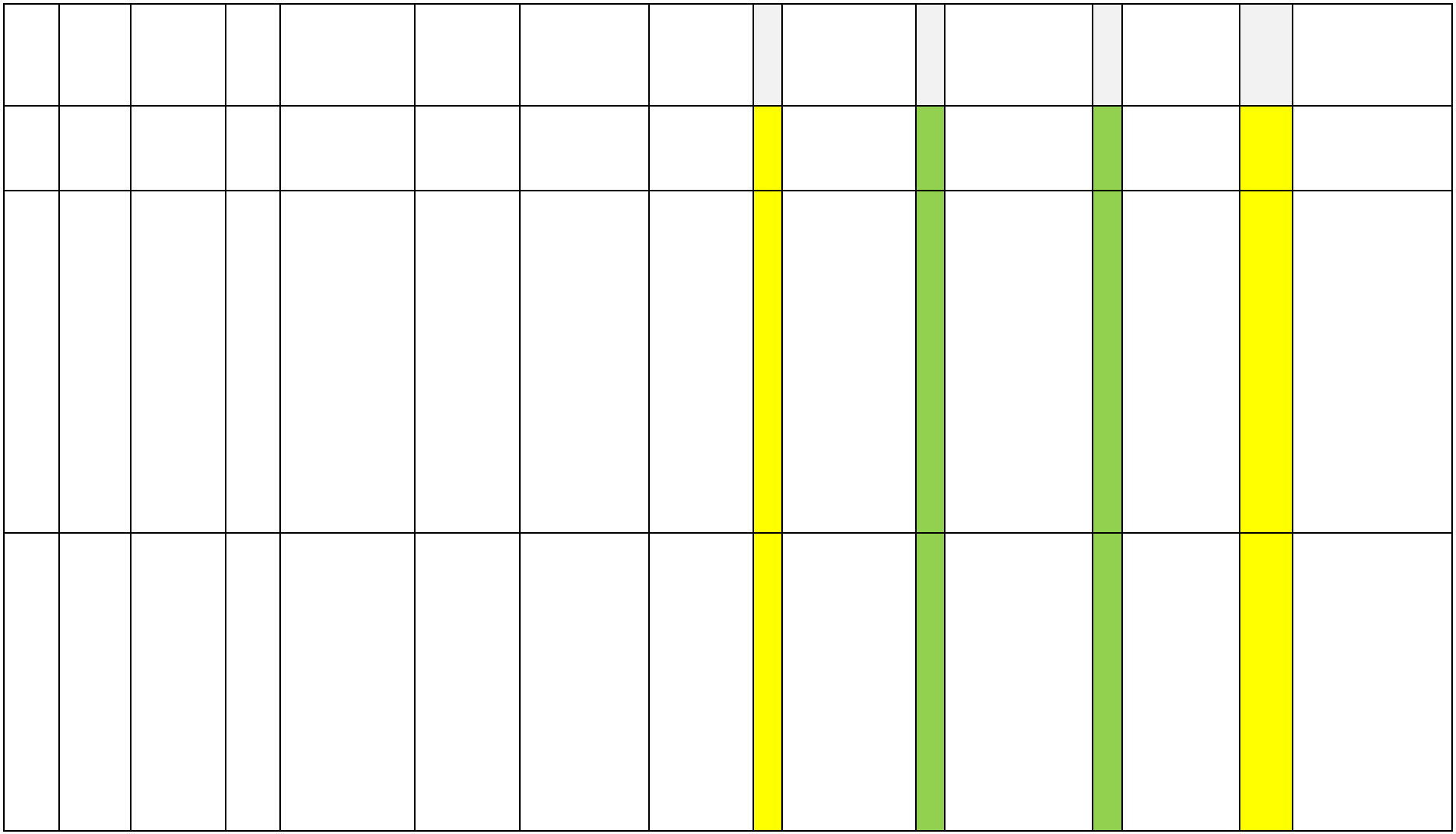


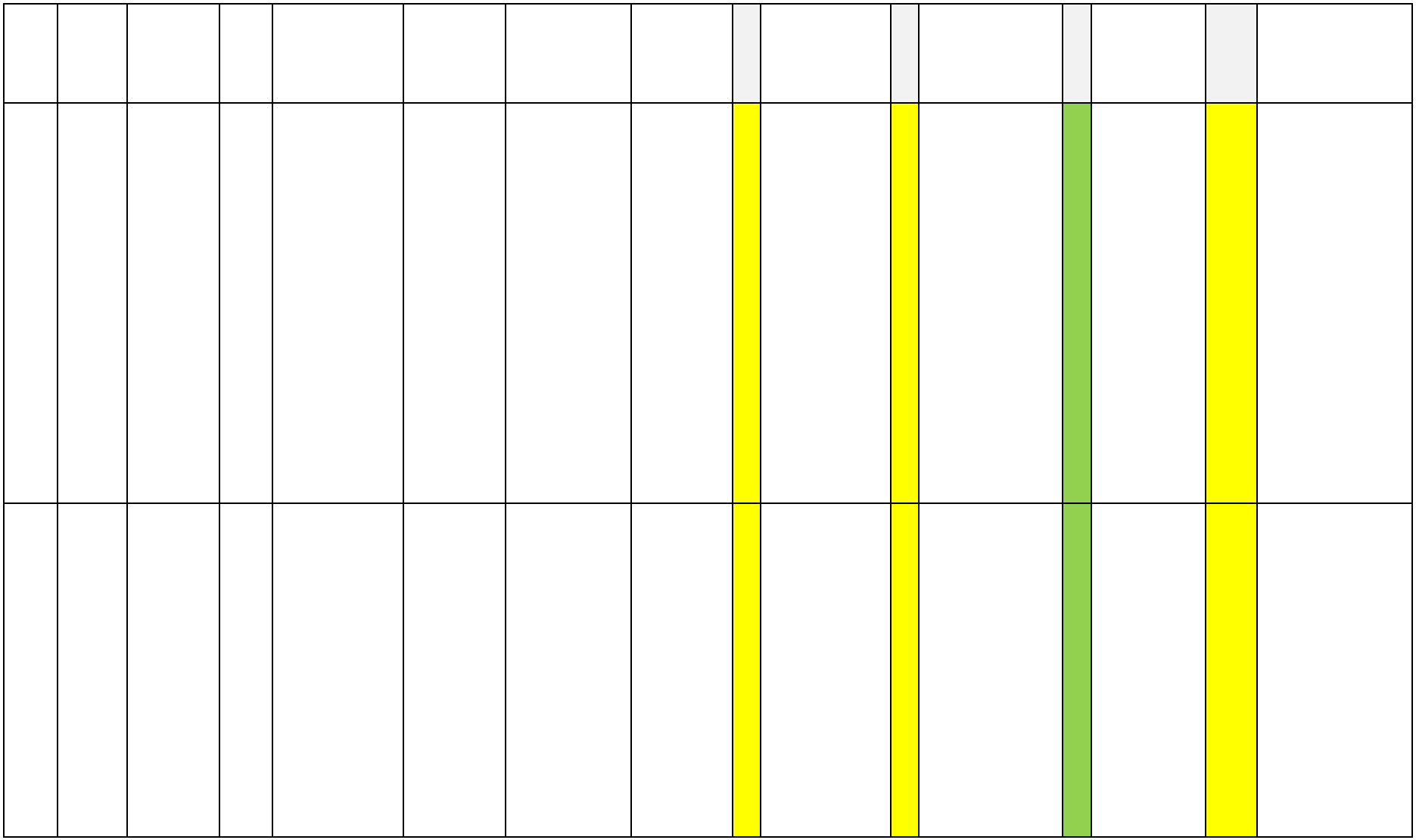


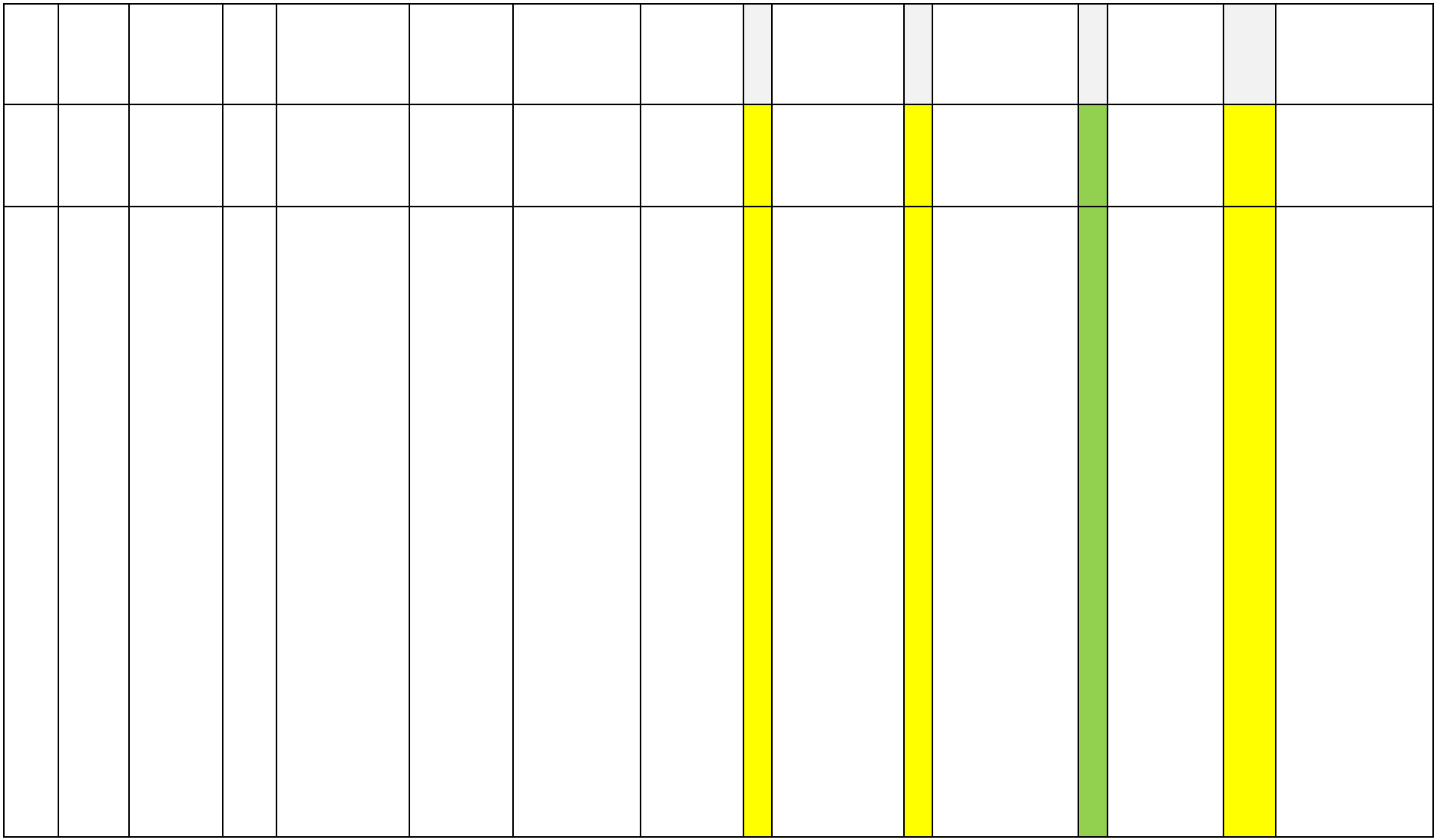


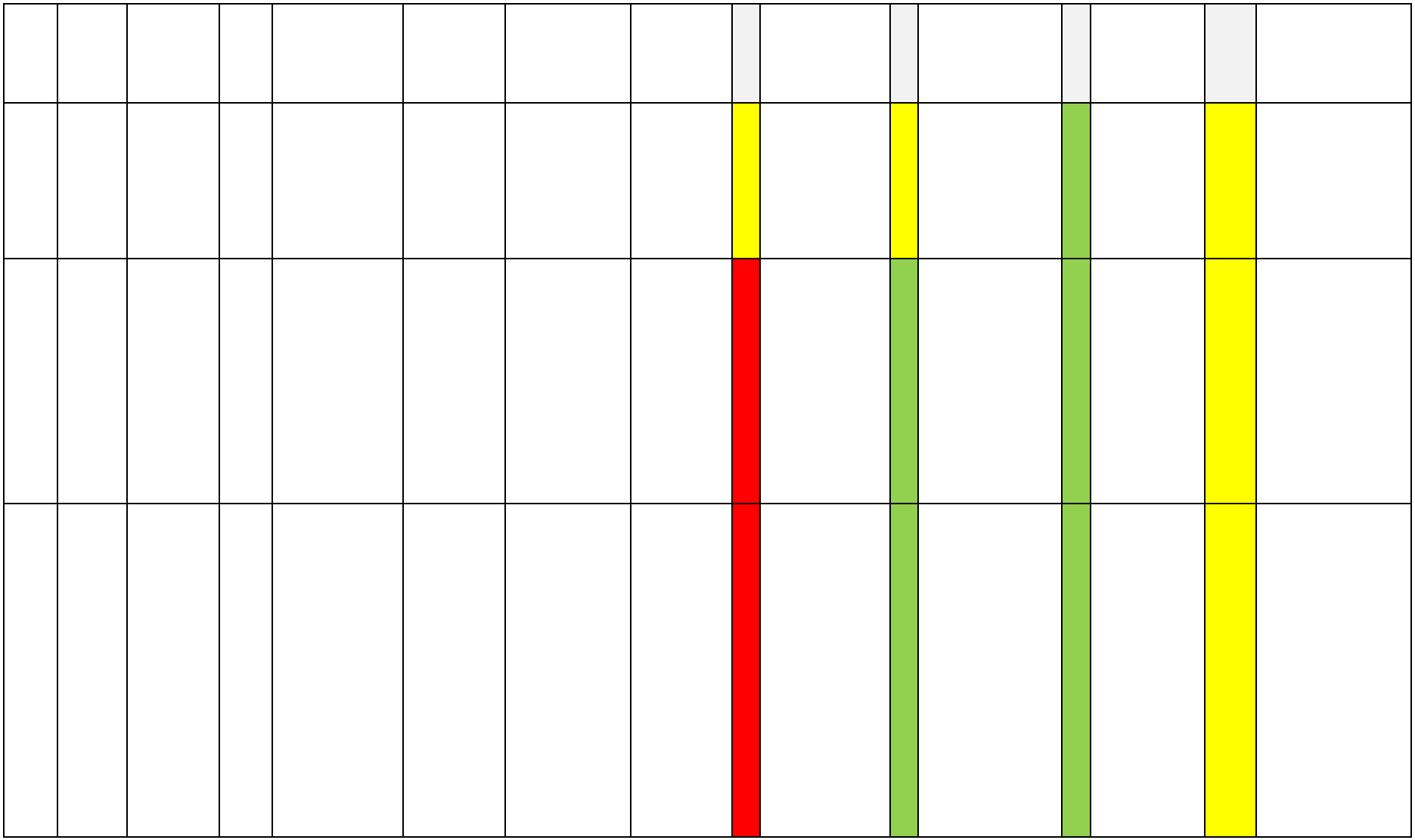


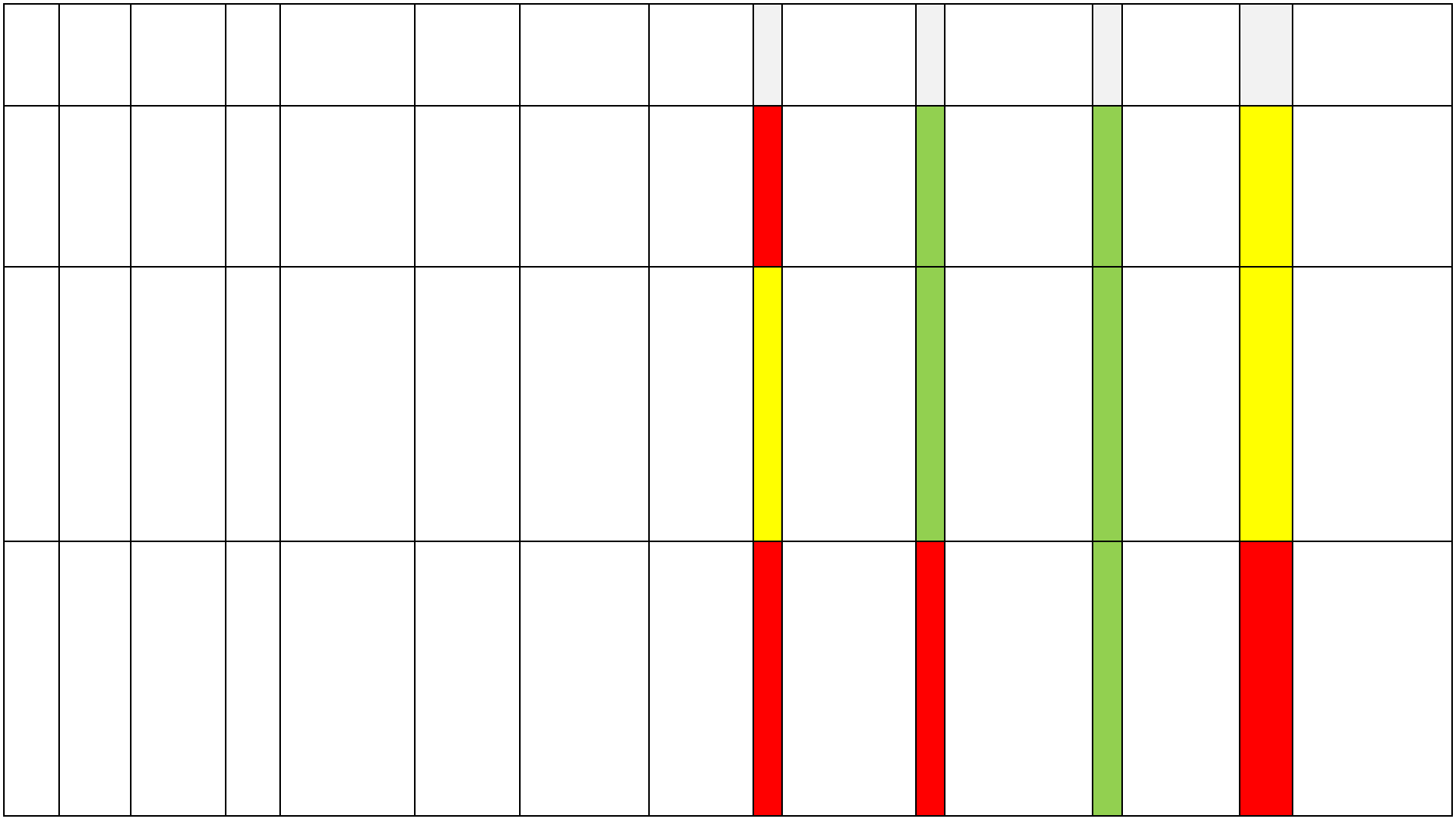


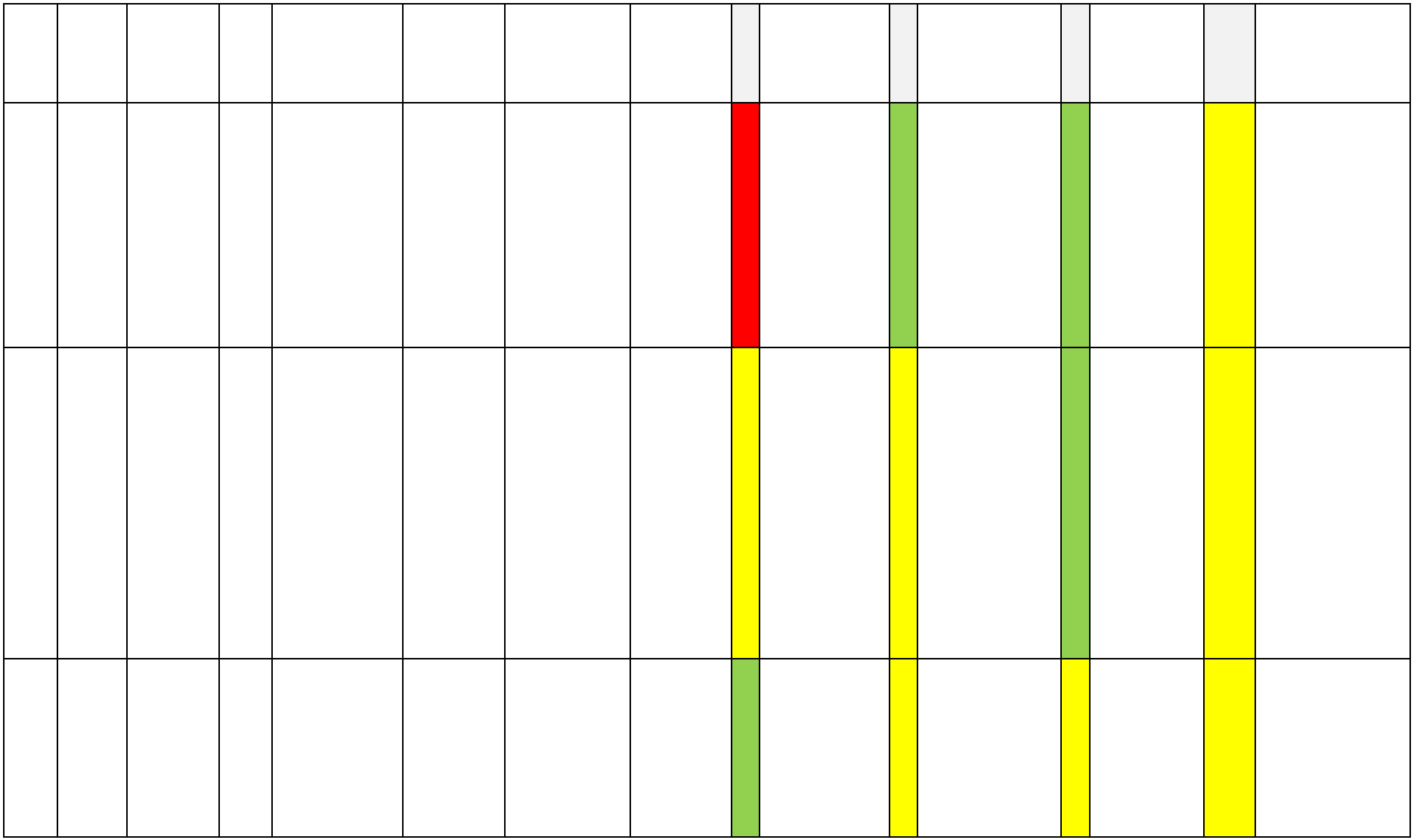


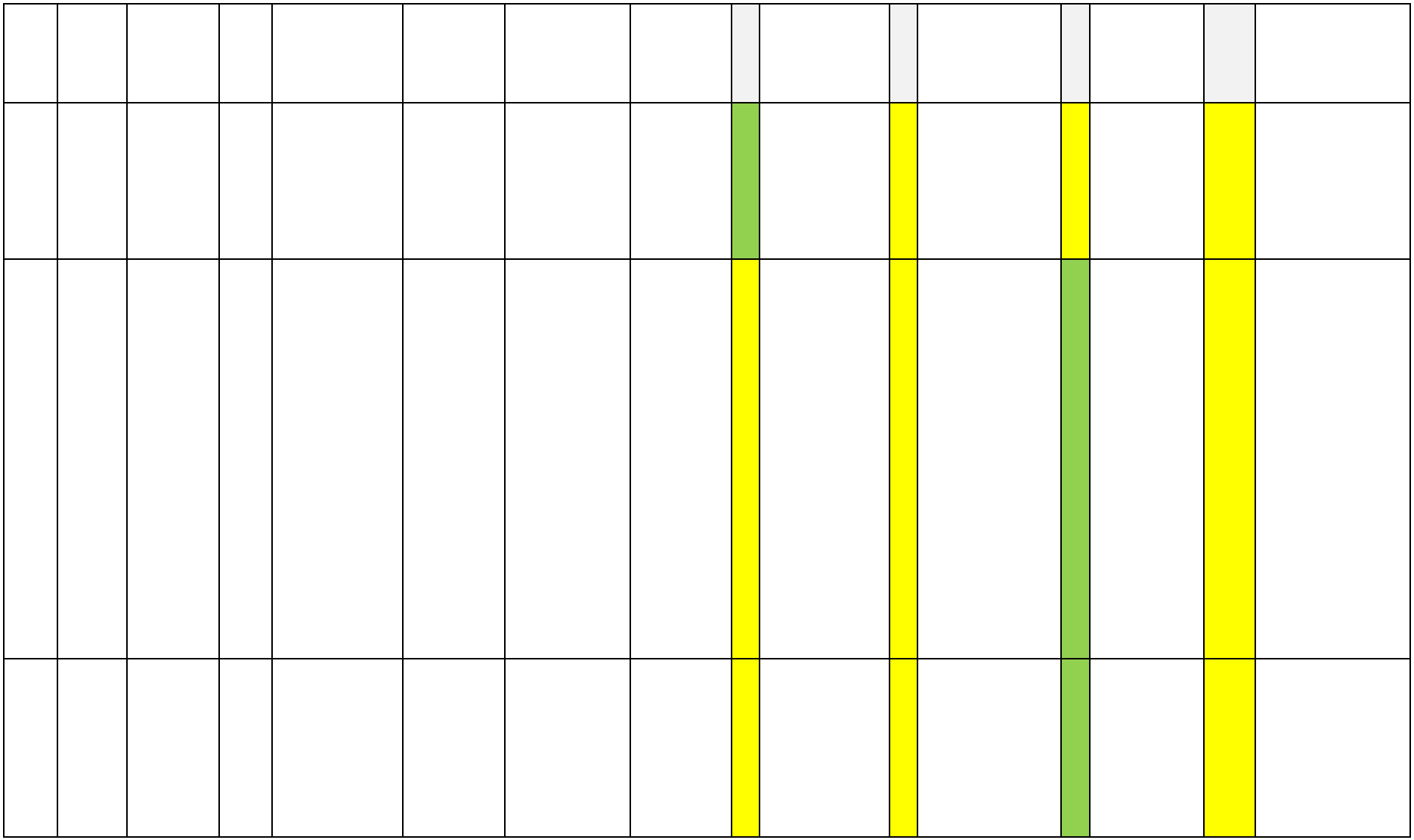


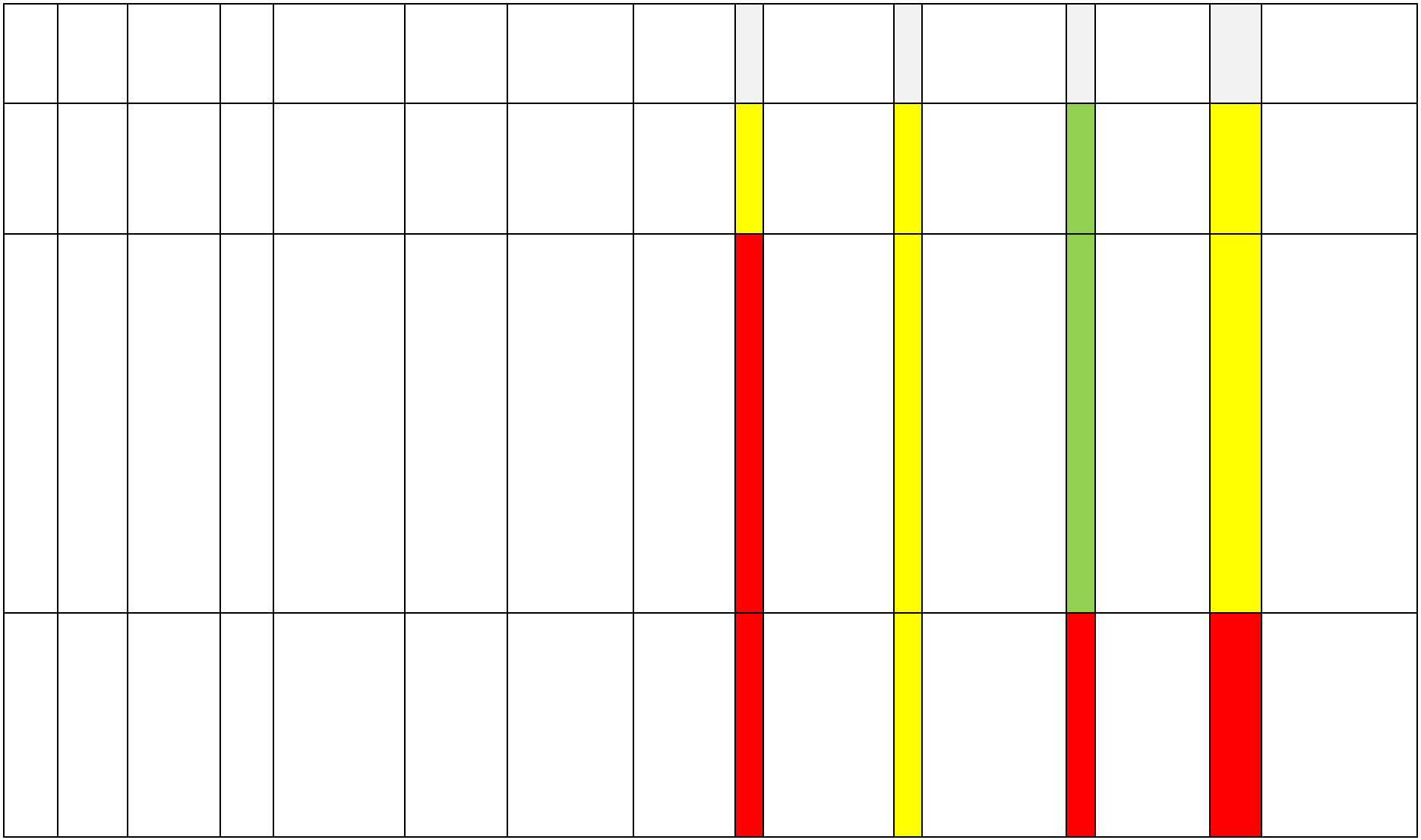


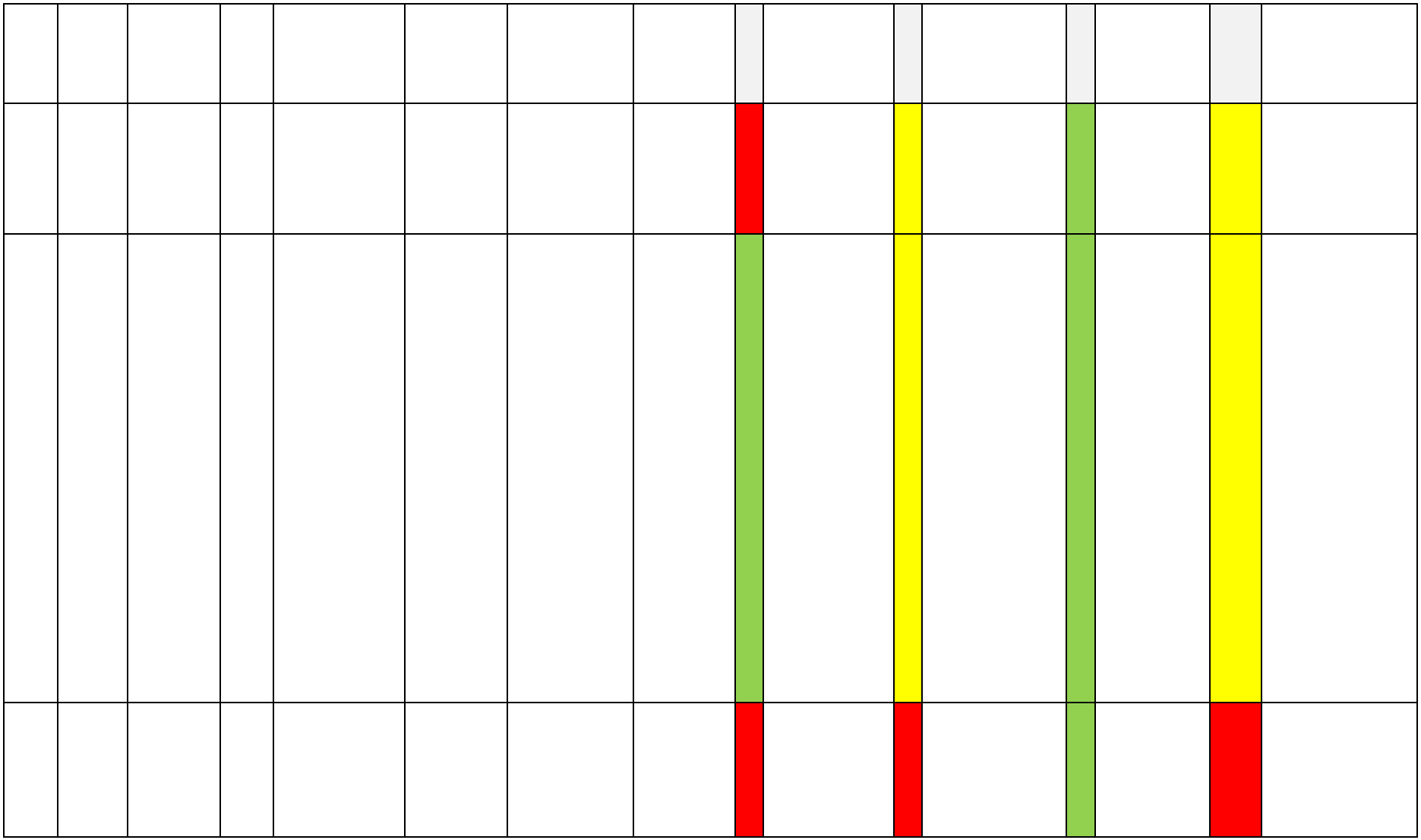












6.3 A-priori risk analysis conclusions

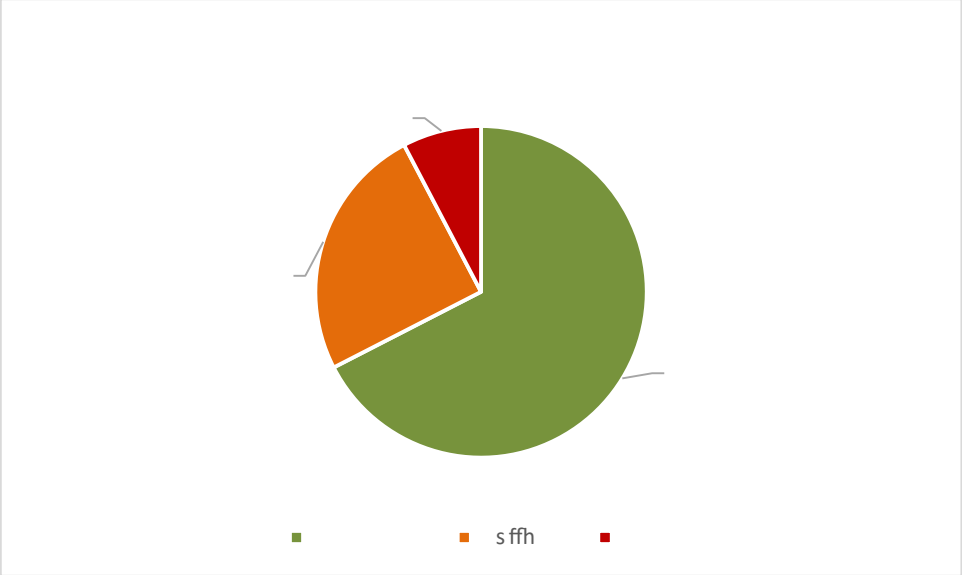


Chart 1: URBANIZED risks severity level percentages

Table 43: Summary of potential a priori risks in URBANIZED, per severity level and type

6.4 Risk analysis next steps

Table 44: URBANIZED actual risks assessment template

7.Conclusions

Acronyms

References