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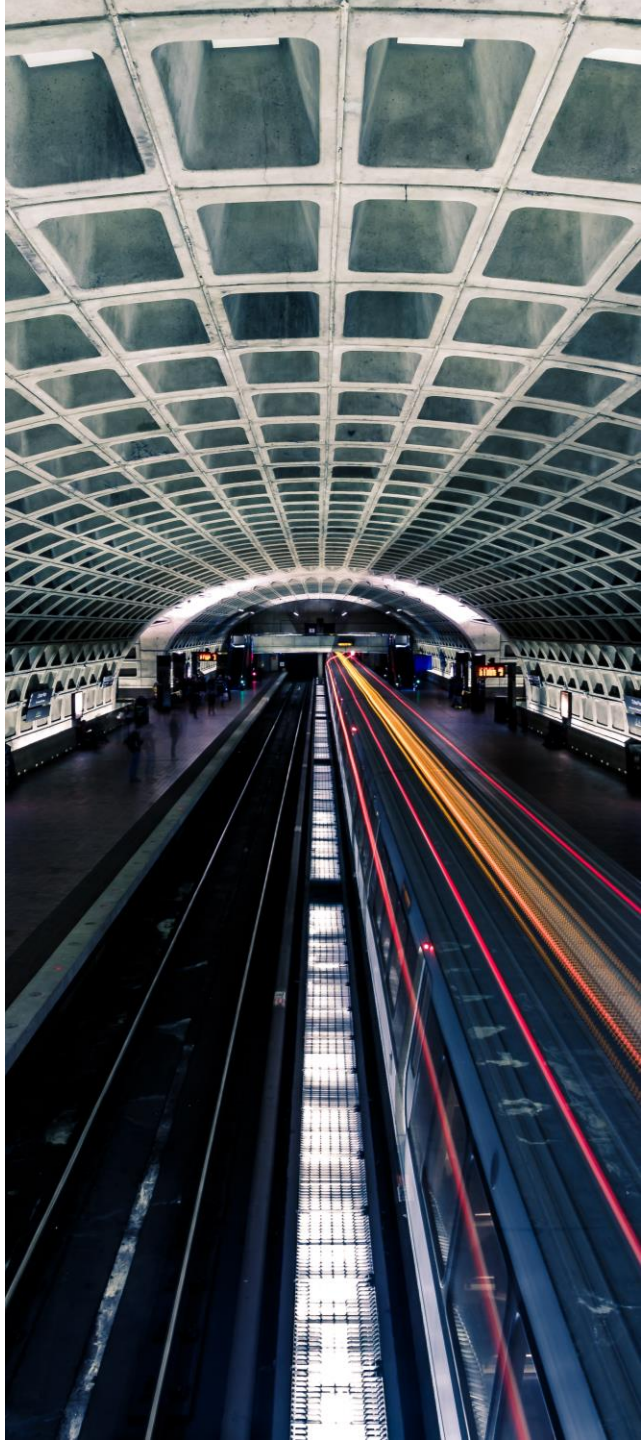
# Time Location Charting

# Time Location Charting

**Contents**

- What are Time Location Charts?
- What do they offer?
- How to produce?
- Demonstration with Safran



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# What are Time Location Charts?

How we traditionally present schedules

| Activity ID | Description | Duration | Early Start | Early Finish | Total Float |
|---|---|---|---|---|---|
| GAP DEL 04 | Gap Road Level Crossing Removal - Reference Program | 212.33 d | 02-Mar-22 | 30-Sep-22 | |
| GAP DEL 04.4 | Main Works | 212.33 d | 02-Mar-22 | 30-Sep-22 | |
| GAP DEL 04.4.3 | Construction and Commissioning | 212.33 d | 02-Mar-22 | 30-Sep-22 | |
| GAP DEL 04.4.3.1 | Rail Works | 127.33 d | 02-Mar-22 | 07-Jul-22 | |
| GAP DEL 04.4.3.2 | Road Works | 195.33 d | 19-Mar-22 | 30-Sep-22 | |
| GAP DEL 04.4.3.2.1 | Piling Works (South) | 41 d | 19-Mar-22 | 28-Apr-22 | |
| GR-IM-2360 | Install Jersey Barriers and Remove Kerb and Pavement | 3 d | 19-Mar-22 | 21-Mar-22 | 5 d |
| GR-IM-2310 | Piling Pad and Handstands Construction | 3 d | 21-Mar-22 | 23-Mar-22 | 5 d |
| GR-IM-2320 | Set-up Rig | 1 d | 24-Mar-22 | 24-Mar-22 | 5 d |
| GR-IM-2330 | Piling Works on Road's Sides (South) | 32 d | 25-Mar-22 | 25-Apr-22 | 5 d |
| GR-IM-7060 | Removal of Piling Pad | 2 d | 26-Apr-22 | 27-Apr-22 | 14 d |
| GR-IM-2370 | Reinstate Road and Pedestrian Pavement | 1 d | 28-Apr-22 | 28-Apr-22 | 29 d |
| GAP DEL 04.4.3.2.2 | Piling Works (North) | 30 d | 10-May-22 | 08-Jun-22 | |
| GR-IM-2410 | Remove Kerb and Pavement | 1 d | 10-May-22 | 10-May-22 | 2 d |
| GR-IM-2400 | Piling Works on Road's Sides (North) | 26 d | 11-May-22 | 05-Jun-22 | 2 d |
| GR-IM-7050 | Removal of Piling Pad | 2 d | 06-Jun-22 | 07-Jun-22 | 2 d |
| GR-IM-2420 | Reinstate Road and Pedestrian Pavement | 1 d | 08-Jun-22 | 08-Jun-22 | 2 d |
| GAP DEL 04.4.3.2.3 | Capping Beam (South) | 14 d | 08-May-22 | 21-May-22 | |
| GR-IM-2430 | Breakback Piles | 3 d | 08-May-22 | 10-May-22 | 29 d |
| GR-IM-2450 | Form Up Capping Beam | 3 d | 11-May-22 | 13-May-22 | 29 d |
| GR-IM-2440 | Fix Reinforcement | 6 d | 14-May-22 | 19-May-22 | 29 d |
| GR-IM-2460 | Pour Capping Beam | 2 d | 20-May-22 | 21-May-22 | 32 d |
| GAP DEL 04.4.3.2.4 | Capping Beam (North) | 14 d | 16-Jun-22 | 29-Jun-22 | |
| GR-IM-2780 | Breakback Piles | 3 d | 16-Jun-22 | 18-Jun-22 | 2 d |
| GR-IM-2800 | Form Up Capping Beam | 3 d | 19-Jun-22 | 21-Jun-22 | 2 d |
| GR-IM-2790 | Fix Reinforcement | 6 d | 22-Jun-22 | 27-Jun-22 | 2 d |
| GR-IM-2810 | Pour Capping Beam | 2 d | 28-Jun-22 | 29-Jun-22 | 2 d |
| GAP DEL 04.4.3.2.5 | Roadway | 114.33 d | 08-Jun-22 | 30-Sep-22 | |
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| GR-IM-2630 | Remove Lighting | 1 d | 30-Jun-22 | 30-Jun-22 | 2 d |
| GR-IM-2640 | Demolish Road Pavement, Footpath and Kerbs | 2 d | 01-Jul-22 | 02-Jul-22 | 2 d |
| GAP DEL 04.4.3.2.5 | Excavation and Shotcreting | 20 d | 03-Jul-22 | 22-Jul-22 | |
| GR-IM-2650 | Bulk Excavation and Shotcrete | 20 d | 03-Jul-22 | 22-Jul-22 | 2 d |
| GAP DEL 04.4.3.2.5 | Road Drainage | 17 d | 23-Jul-22 | 08-Aug-22 | |
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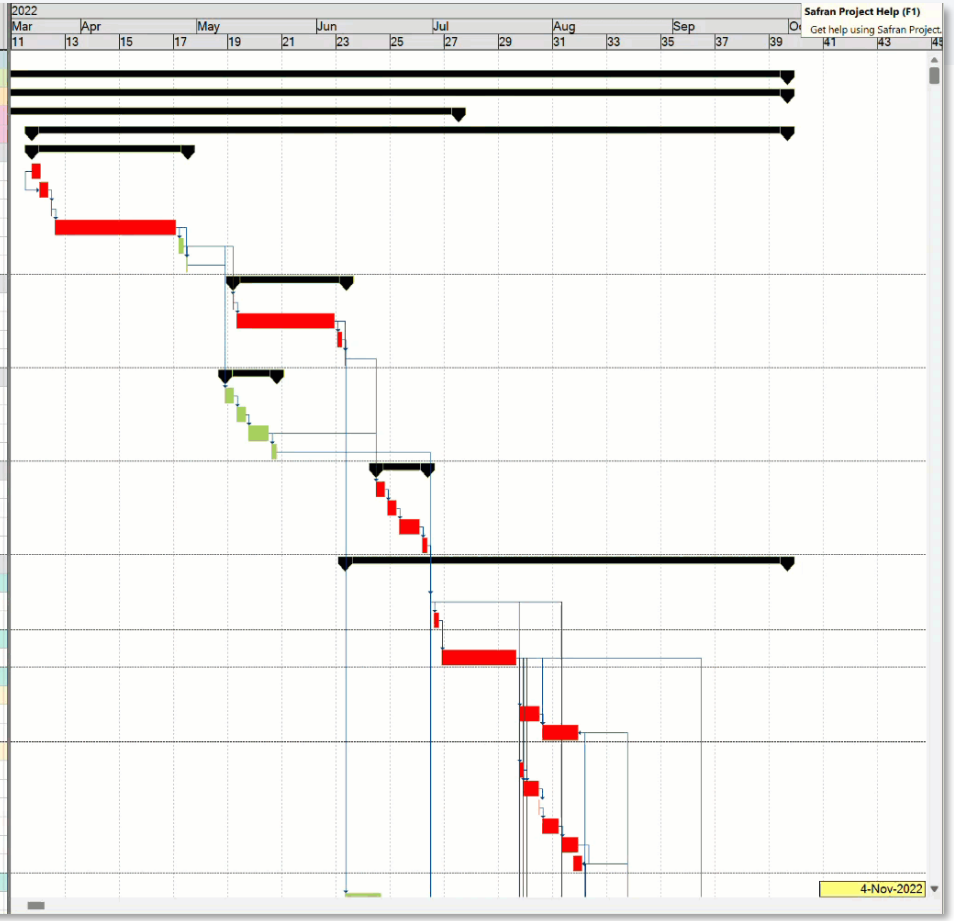
| GAP DEL 04.4.3.2. | Detention Sump | 17 d | 23-Jul-22 | 08-Aug-22 | |
| GR-IM-7180 | Additional Excavation | 1.5 d | 23-Jul-22 | 24-Jul-22 | 2 d |
| GR-IM-7130 | Slab Formwork and RFP | 4 d | 24-Jul-22 | 28-Jul-22 | 2 d |
| GR-IM-7150 | Concrete Pour Slab | 0.5 d | 28-Jul-22 | 28-Jul-22 | 2 d |
| GR-IM-7160 | Curing | 5 d | 29-Jul-22 | 02-Aug-22 | 2 d |
| GR-IM-7170 | Concrete Block Installation | 5 d | 03-Aug-22 | 07-Aug-22 | 2 d |
| GR-IM-7140 | Backfilling | 3 d | 06-Aug-22 | 08-Aug-22 | 2 d |
| GAP DEL 04.4.3.2.5 | Jacked Pipe from Oshanassy St LPOD Outlet | 45 d | 08-Jun-22 | 22-Jul-22 | |
| GR-IM-5770 | Excavate and Install Thrust Shaft at Oshanassy St | 10 d | 08-Jun-22 | 17-Jun-22 | 19 d |

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| GR-IM-2780 | Breakback Piles | 3 d | 16-Jun-22 | 18-Jun-22 | 2 d |
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| GR-IM-7160 | Curing | 5 d | 29-Jul-22 | 02-Aug-22 | 2 d |
| GR-IM-7170 | Concrete Block Installation | 5 d | 03-Aug-22 | 07-Aug-22 | 2 d |
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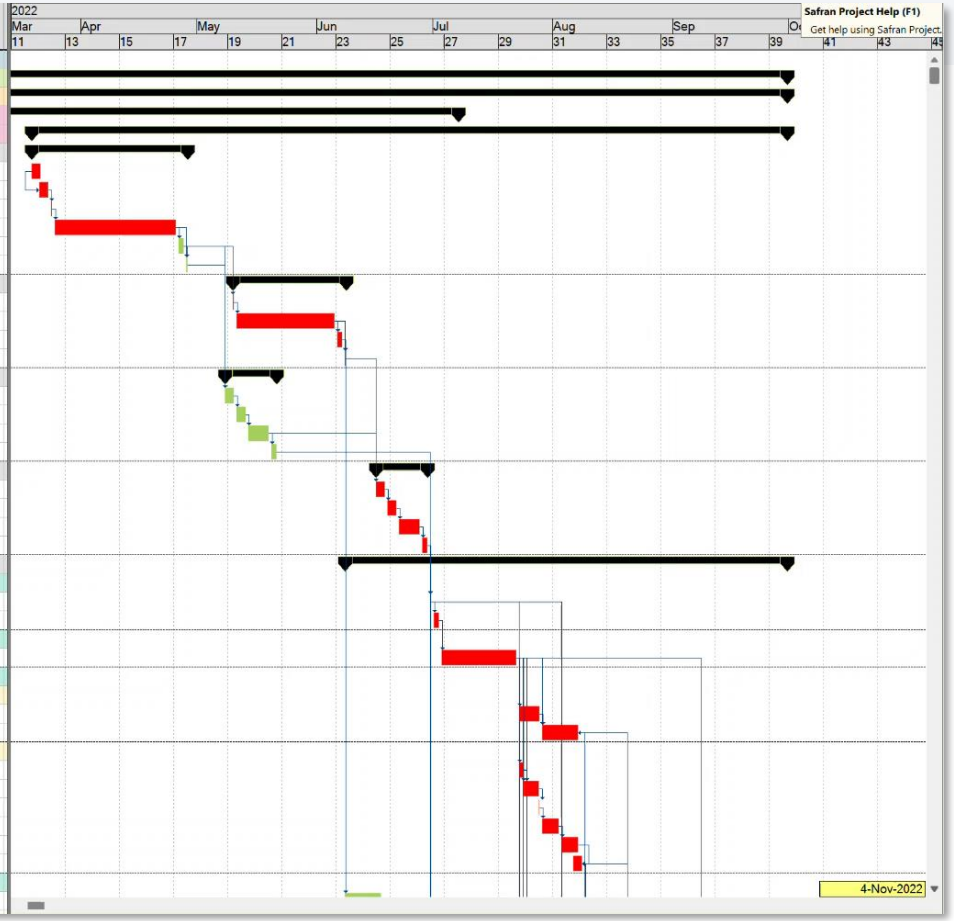


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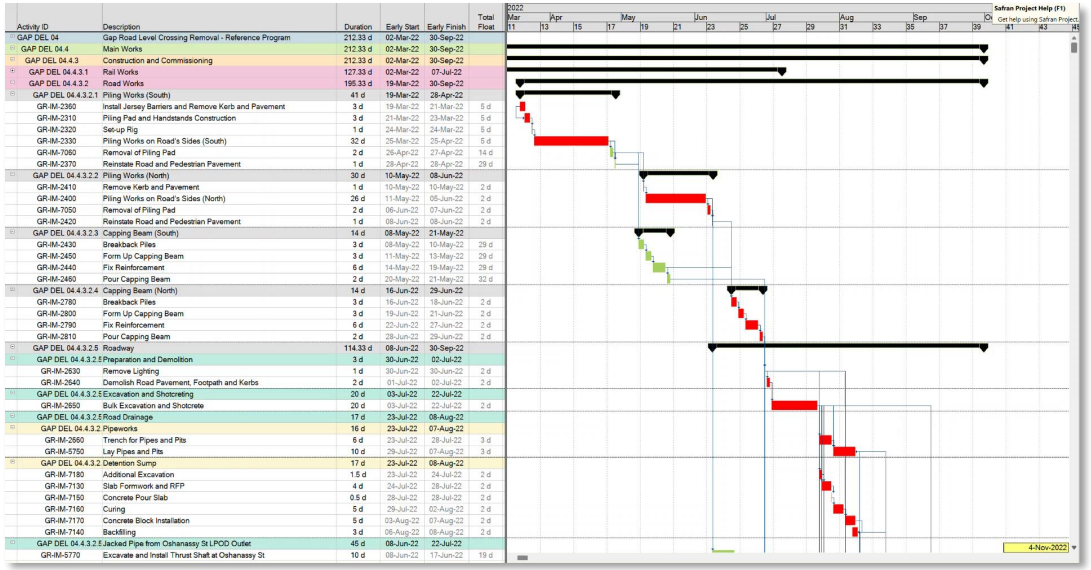
# What are Time Location Charts?

Linear and Location based projects have another option to present their schedules



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| GR-IM-2650 | Bulk Excavation and Shotcrete | 20 d | 03-Jul-22 | 22-Jul-22 | 2 d |
| GAP DEL 04.4.3.2.9 | Road Drainage | 17 d | 23-Jul-22 | 08-Aug-22 | |
| GAP DEL 04.4.3.2.10 | Pipeworks | 16 d | 23-Jul-22 | 07-Aug-22 | |
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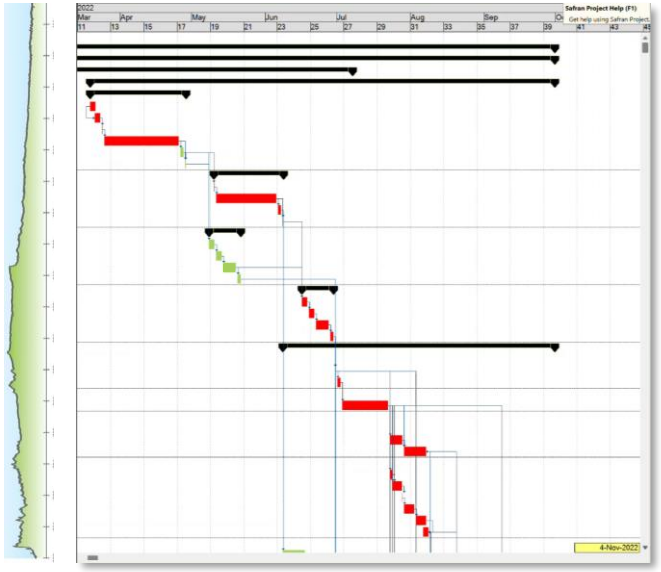
Use Location axis rather than a WBS

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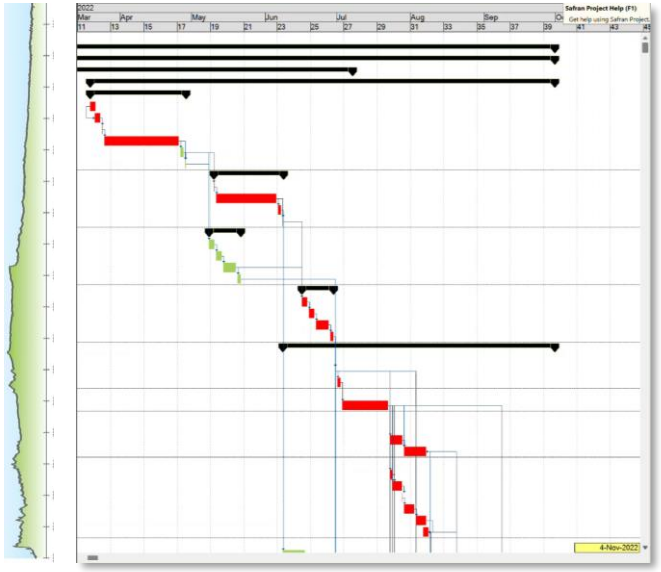
# What are Time Location Charts?

New Dimension: Activities by time **AND** location

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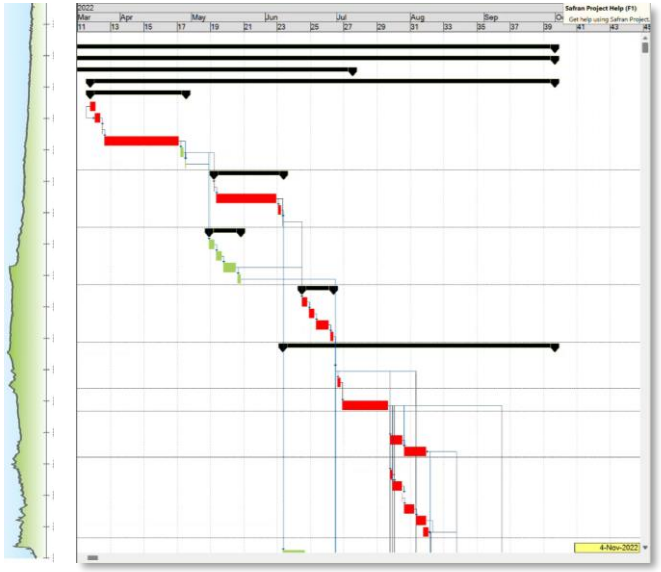

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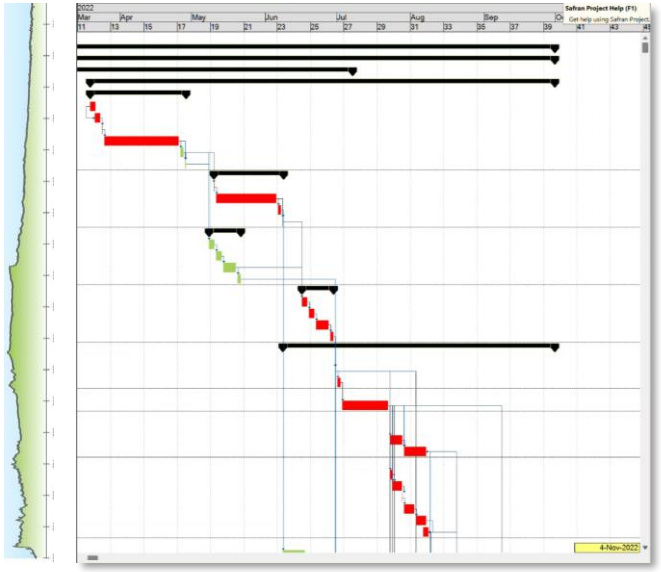

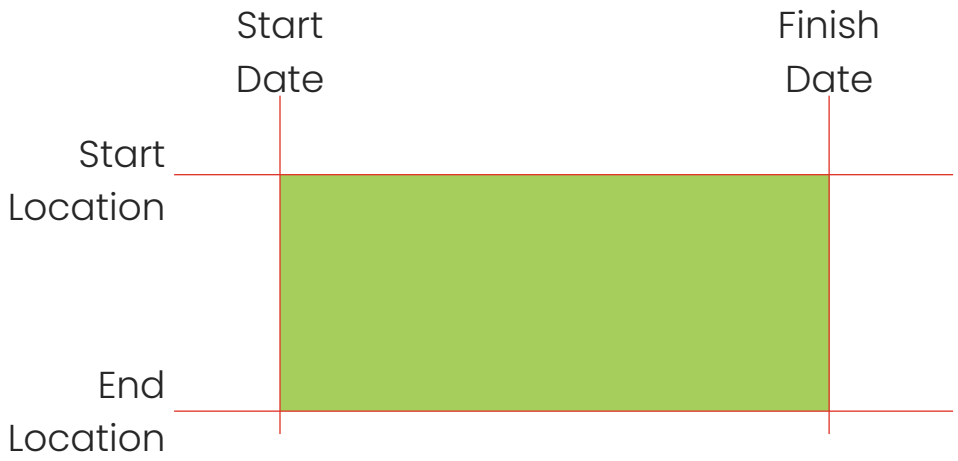


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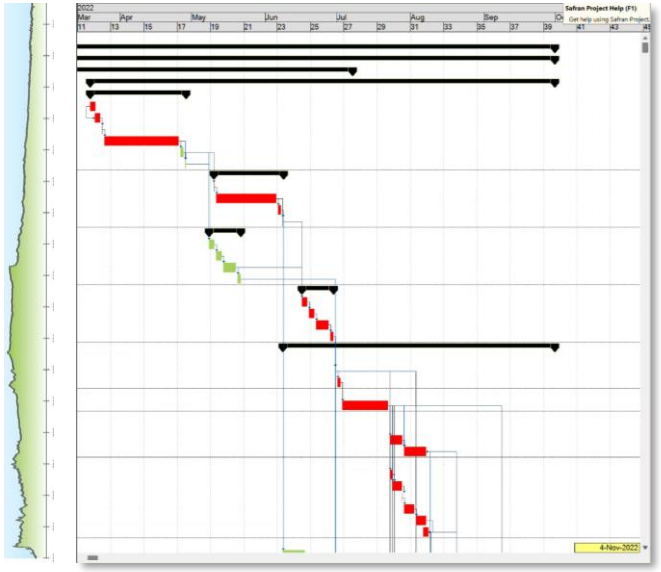

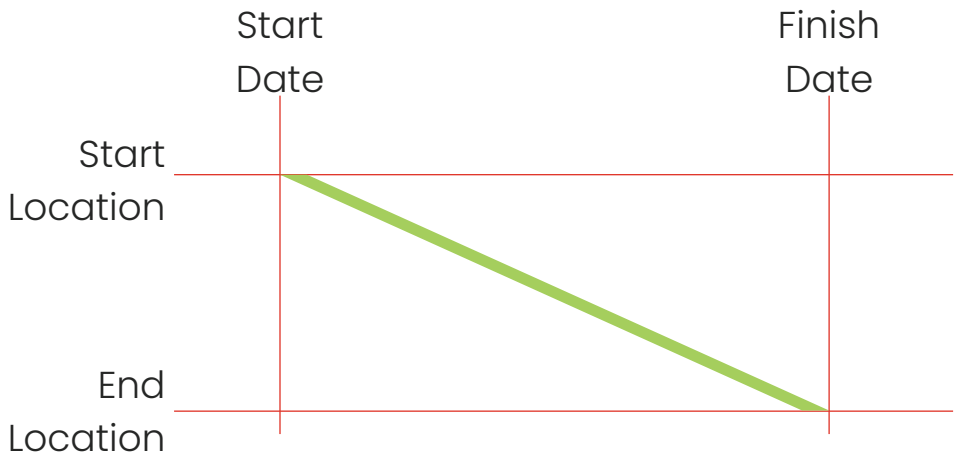


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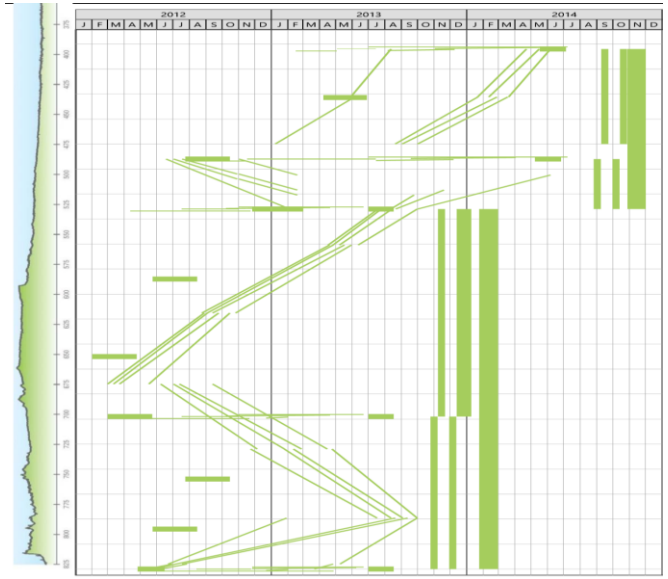


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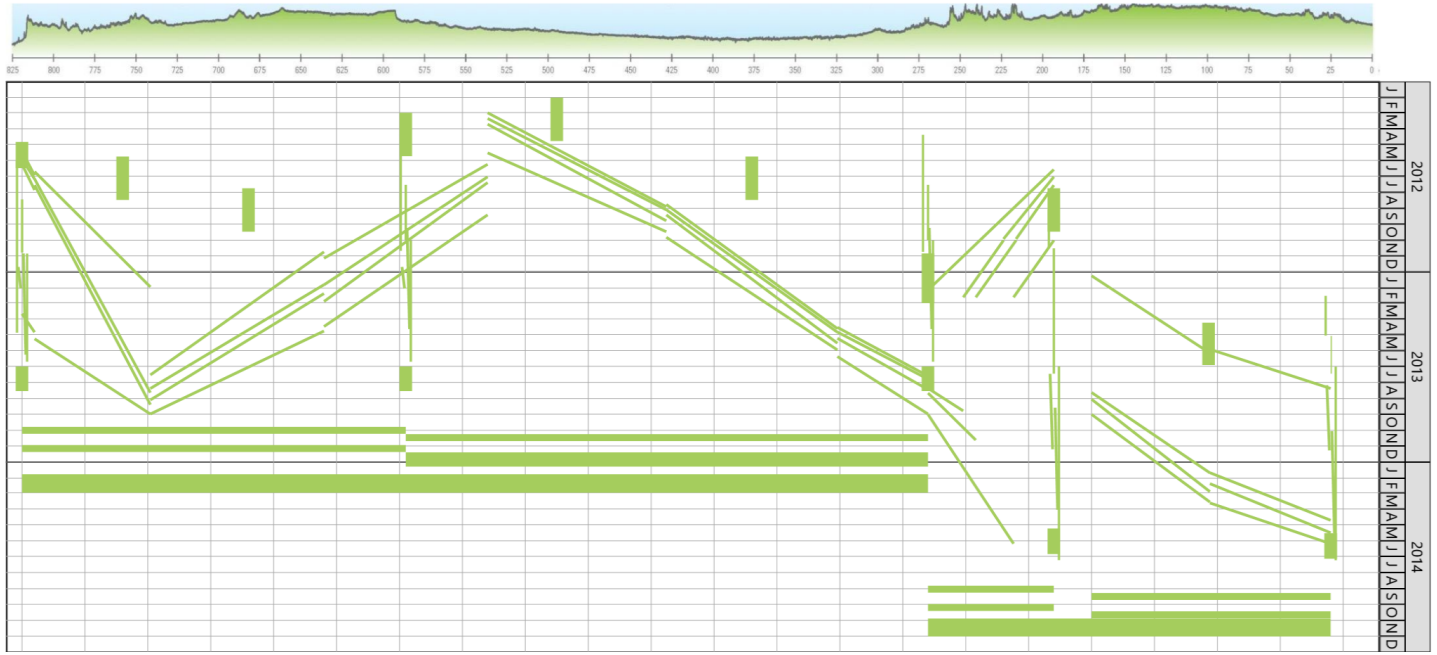


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# What are Time Location Charts?

New Dimension: Context to activities using shapes and colours

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# What Do they offer?

**Key Benefits**

- Single page presentation of schedule
- Improved Communication
- Improved Analysis – Sequencing, logic, optimisation
- Resourcing
- Schedule Comparison

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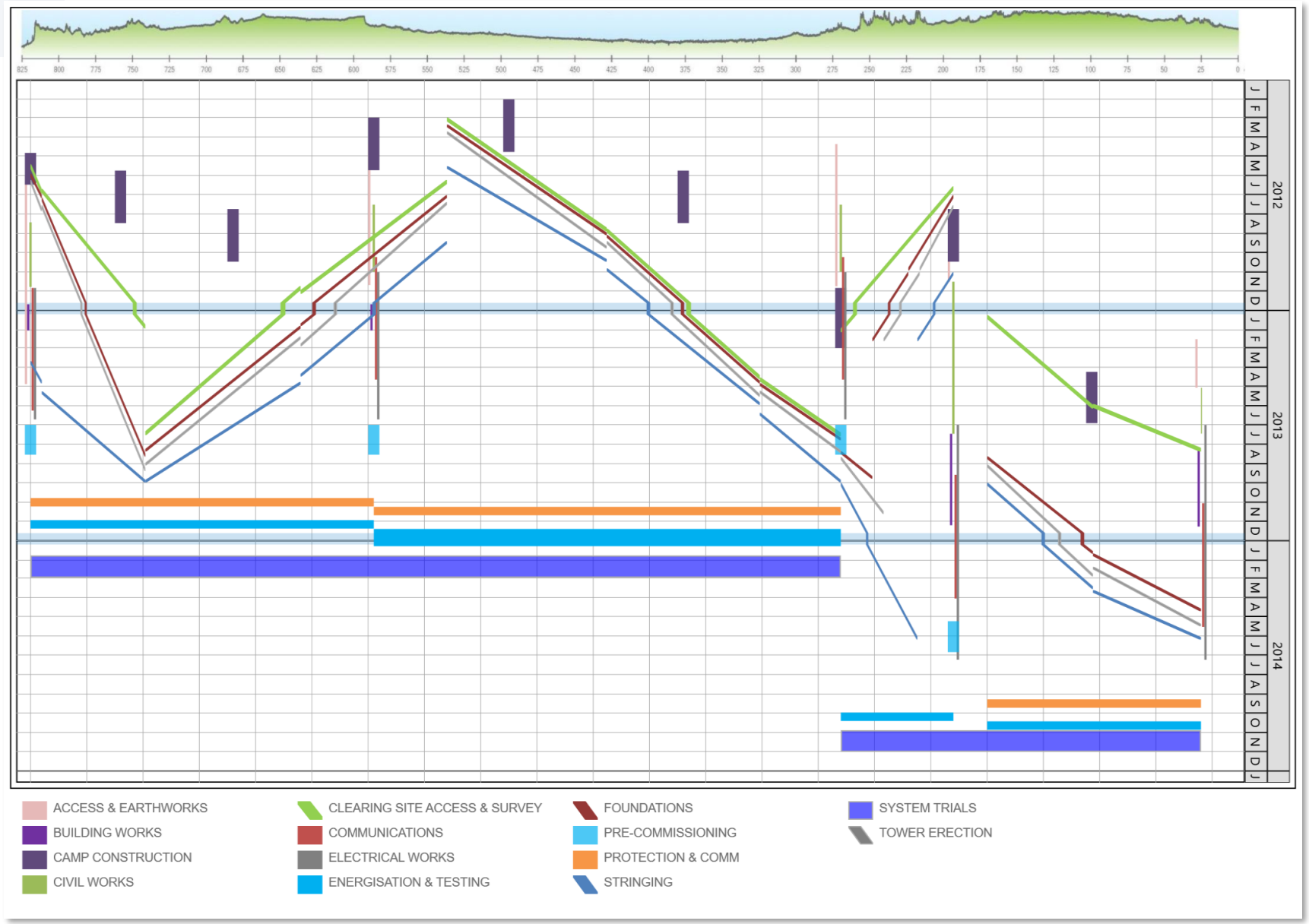
# Benefits

**Schedule Analysis**

- Crew Sequencing and Directions
- Production Rates
- Non-Work Periods
- Task Overlaps/Clashes
- Logic Checks
- Resource Analysis



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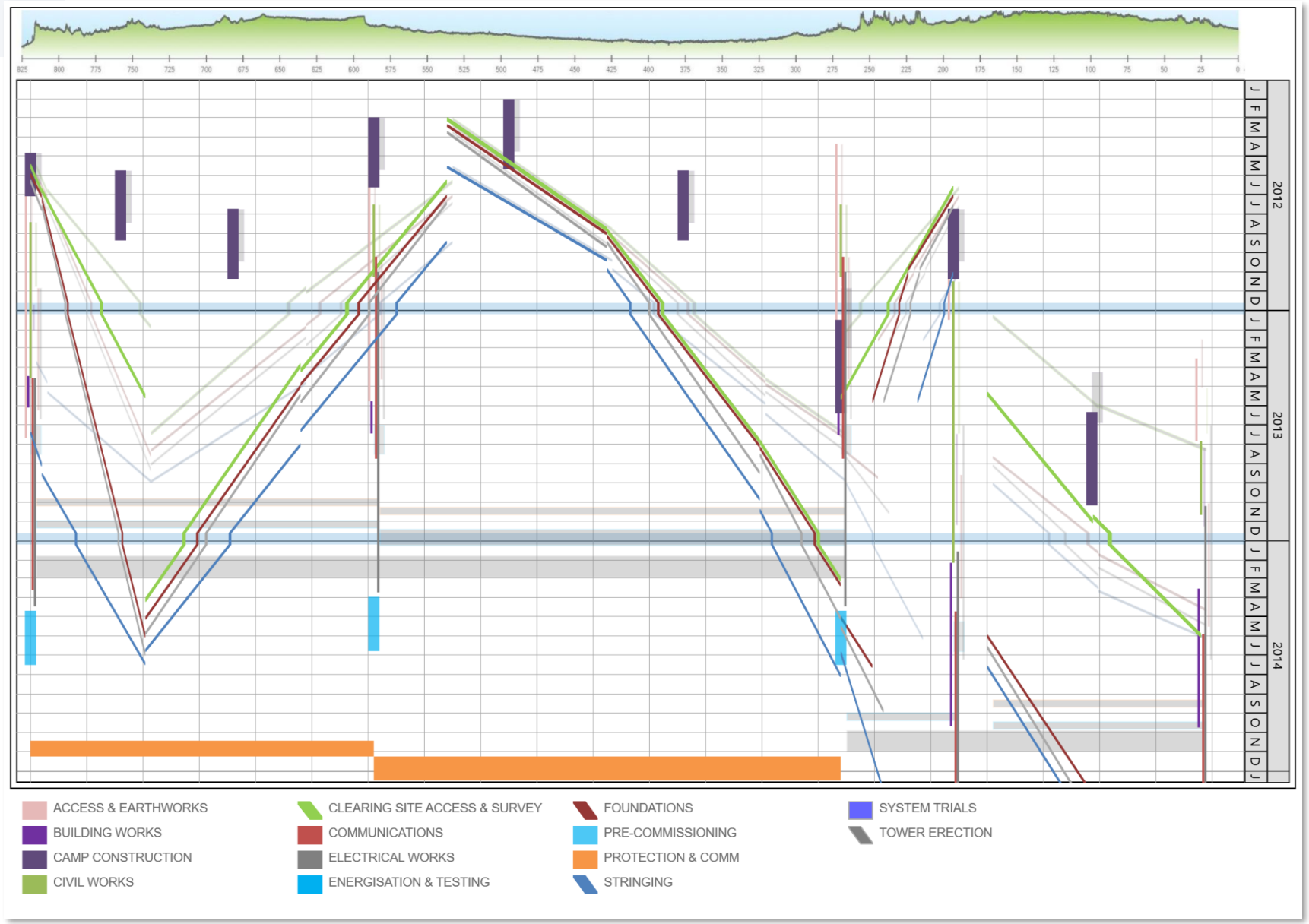

# Example

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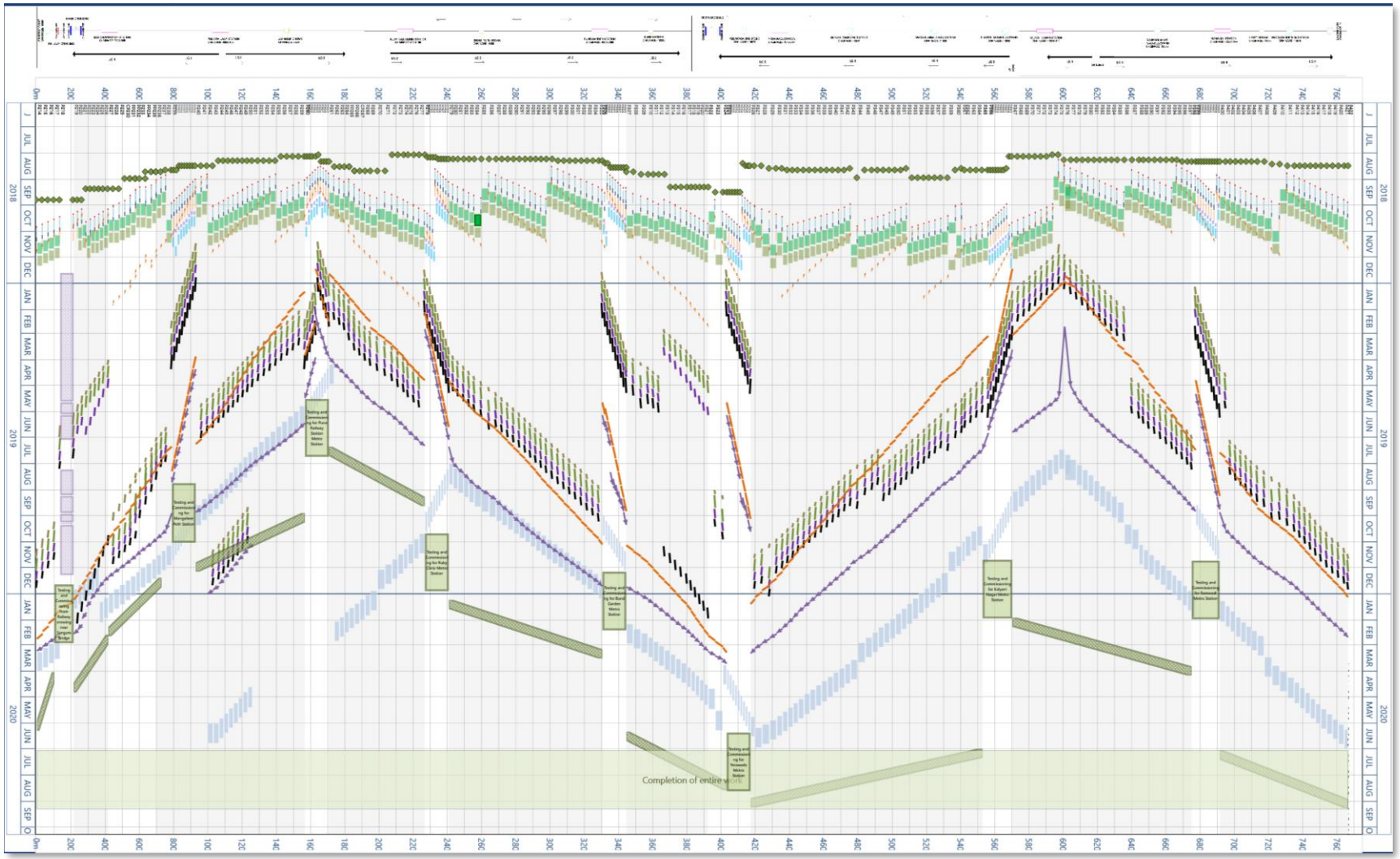
**Metro Viaduct Project**



# Example

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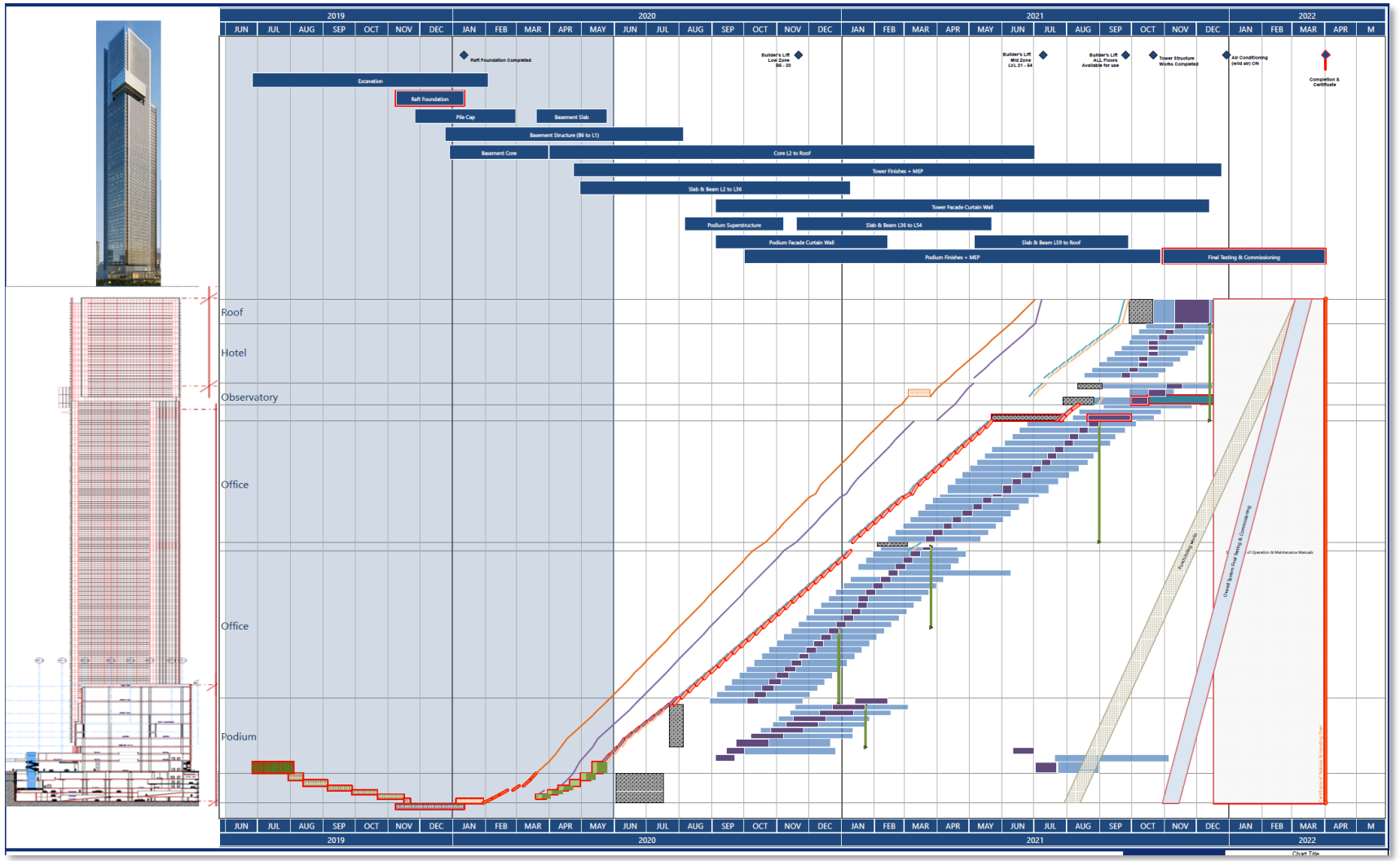
## High Rise Building



# Example

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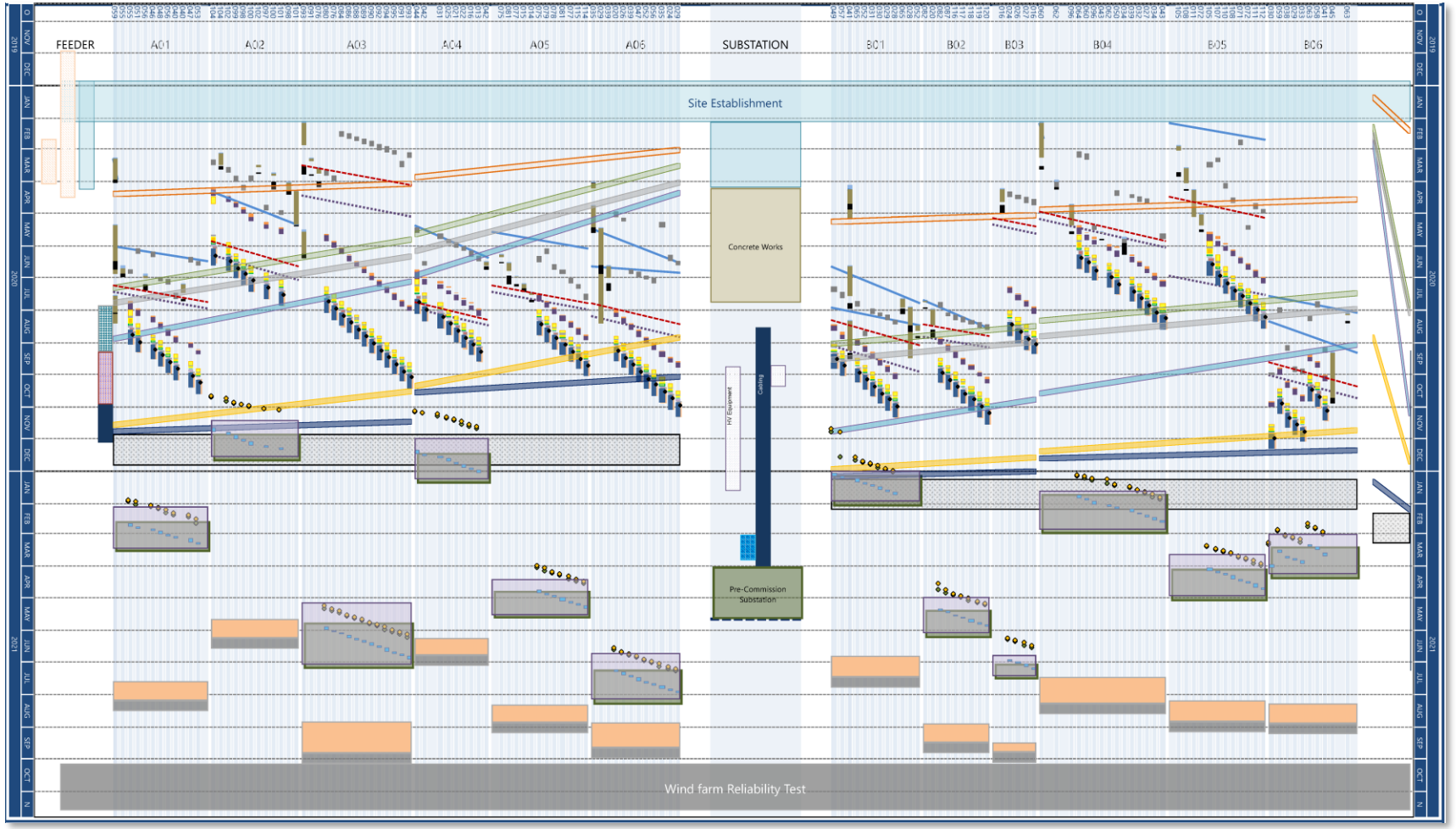
**Wind Farm**



# How to Produce?

**Methods**

- Manually Drawn
- Specialised Scheduling Applications
- Hybrid method

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# Methods

Options to Produce Time Location Charts

## Manual

- AutoCad, Graphical Tools, Spreadsheets
- Translation errors
- Limited features
- Non-scalable solution
- Cheap, readily available

## Specialised

- Suited to only the Linear elements
- Manipulate the linear tasks to re-calculate the schedule
- Expensive and complex
- Require significant training and learning
- Duplicates Schedule
- Issues in re-integration or in multiple schedule/user situations

## Hybrid

- Append Data to existing CPM Schedules
- Exchange Data from CPM schedule to Linear Schedule (one way)
- Modifications/Updates are made in the Integrated CPM schedule
- Time Location chart is updated to reflect changes

# Demo
# Safran Planner / Risk

**Steps**

- Append additional information
- Connect and Import from Safran
- Define Context Shapes/Colours
- Update Schedule
- (Risk) Risk Analysis Output

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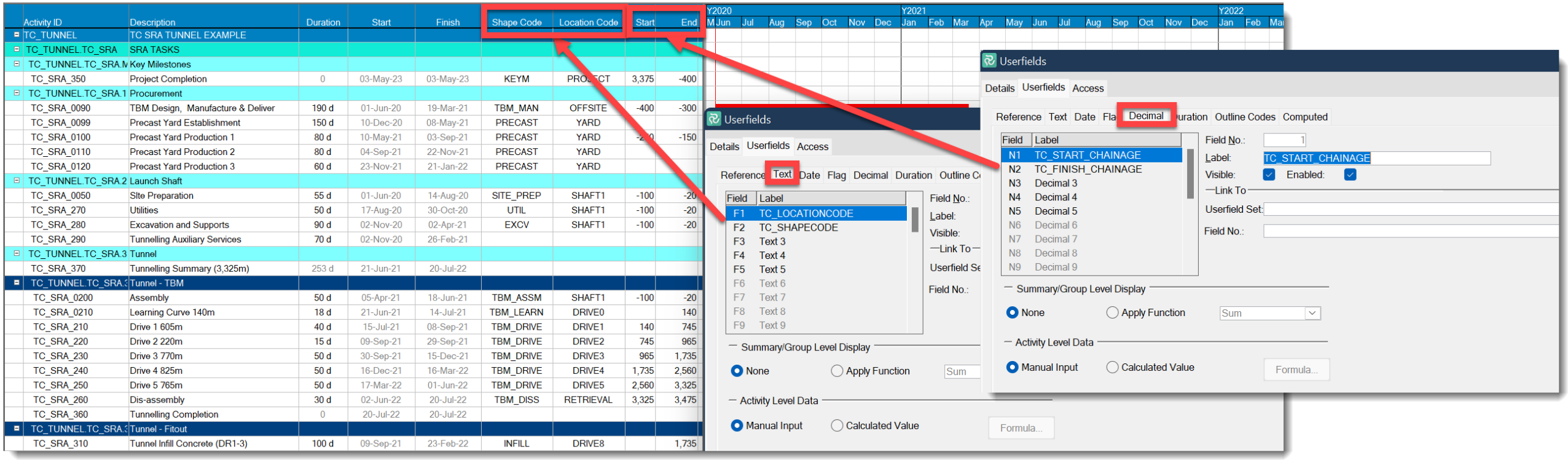
# Safran Risk


Activity ID
Description
Duration
Start
Finish
Shape Code
Location Code
Start
End
TC_TUNNEL TC SRA TUNNEL EXAMPLE
TC_TUNNEL.TC_SRA SRA TASKS
TC_TUNNEL.TC_SRA.M Key Milestones
TC_SRA_350 Project Completion 0 03-May-23 03-May-23 KEYM PROJECT 3,375 -400
TC_TUNNEL.TC_SRA.1 Procurement
TC_SRA_0090 TBM Design, Manufacture & Deliver 190 d 01-Jun-20 19-Mar-21 TBM_MAN OFFSITE -400 -300
TC_SRA_0099 Precast Yard Establishment 150 d 10-Dec-20 08-May-21 PRECAST YARD
TC_SRA_0100 Precast Yard Production 1 80 d 10-May-21 03-Sep-21 PRECAST YARD -150
TC_SRA_0110 Precast Yard Production 2 80 d 04-Sep-21 22-Nov-21 PRECAST YARD
TC_SRA_0120 Precast Yard Production 3 60 d 23-Nov-21 21-Jan-22 PRECAST YARD
TC_TUNNEL.TC_SRA.2 Launch Shaft
TC_SRA_0050 Site Preparation 55 d 01-Jun-20 14-Aug-20 SITE_PREP SHAFT1 -100 -20
TC_SRA_270 Utilities 50 d 17-Aug-20 30-Oct-20 UTIL SHAFT1 -100 -20
TC_SRA_280 Excavation and Supports 90 d 02-Nov-20 02-Apr-21 EXCV SHAFT1 -100 -20
TC_SRA_290 Tunnelling Auxiliary Services 70 d 02-Nov-20 26-Feb-21
TC_TUNNEL.TC_SRA.3 Tunnel
TC_SRA_370 Tunnelling Summary (3,325m) 253 d 21-Jun-21 20-Jul-22
TC_TUNNEL.TC_SRA.3 Tunnel - TBM
TC_SRA_0200 Assembly 50 d 05-Apr-21 18-Jun-21 TBM_ASSM SHAFT1 -100 -20
TC_SRA_0210 Learning Curve 140m 18 d 21-Jun-21 14-Jul-21 TBM_LEARN DRIVE0 140
TC_SRA_210 Drive 1 605m 40 d 15-Jul-21 08-Sep-21 TBM_DRIVE DRIVE1 140 745
TC_SRA_220 Drive 2 220m 15 d 09-Sep-21 29-Sep-21 TBM_DRIVE DRIVE2 745 965
TC_SRA_230 Drive 3 770m 50 d 30-Sep-21 15-Dec-21 TBM_DRIVE DRIVE3 965 1,735
TC_SRA_240 Drive 4 825m 50 d 16-Dec-21 16-Mar-22 TBM_DRIVE DRIVE4 1,735 2,560
TC_SRA_250 Drive 5 765m 50 d 17-Mar-22 01-Jun-22 TBM_DRIVE DRIVE5 2,560 3,325
TC_SRA_260 Dis-assembly 30 d 02-Jun-22 20-Jul-22 TBM_DISS RETRIEVAL 3,325 3,475
TC_SRA_360 Tunnelling Completion 0 20-Jul-22 20-Jul-22
TC_TUNNEL.TC_SRA.3 Tunnel - Fitout
TC_SRA_310 Tunnel Infill Concrete (DR1-3) 100 d 09-Sep-21 23-Feb-22 INFILL DRIVE8 1,735
Y2020
Y2021
Y2022
Userfields
Details Userfields Access
Reference Text Date Flag Decimal Duration Outline Codes
Field Label
F1 TC_LOCATIONCODE
F2 TC_SHAPECODE
F3 Text 3
F4 Text 4
F5 Text 5
F6 Text 6
F7 Text 7
F8 Text 8
F9 Text 9
Field No.:
Label:
Visible:
Link To
Summary/Group Level Display
None
Apply Function
Sum
Activity Level Data
Manual Input
Calculated Value
Formula...
Userfields
Details Userfields Access
Reference Text Date Flag Decimal Duration Outline Codes Computed
Field Label
N1 TC_START_CHAINAGE
N2 TC_FINISH_CHAINAGE
N3 Decimal 3
N4 Decimal 4
N5 Decimal 5
N6 Decimal 6
N7 Decimal 7
N8 Decimal 8
N9 Decimal 9
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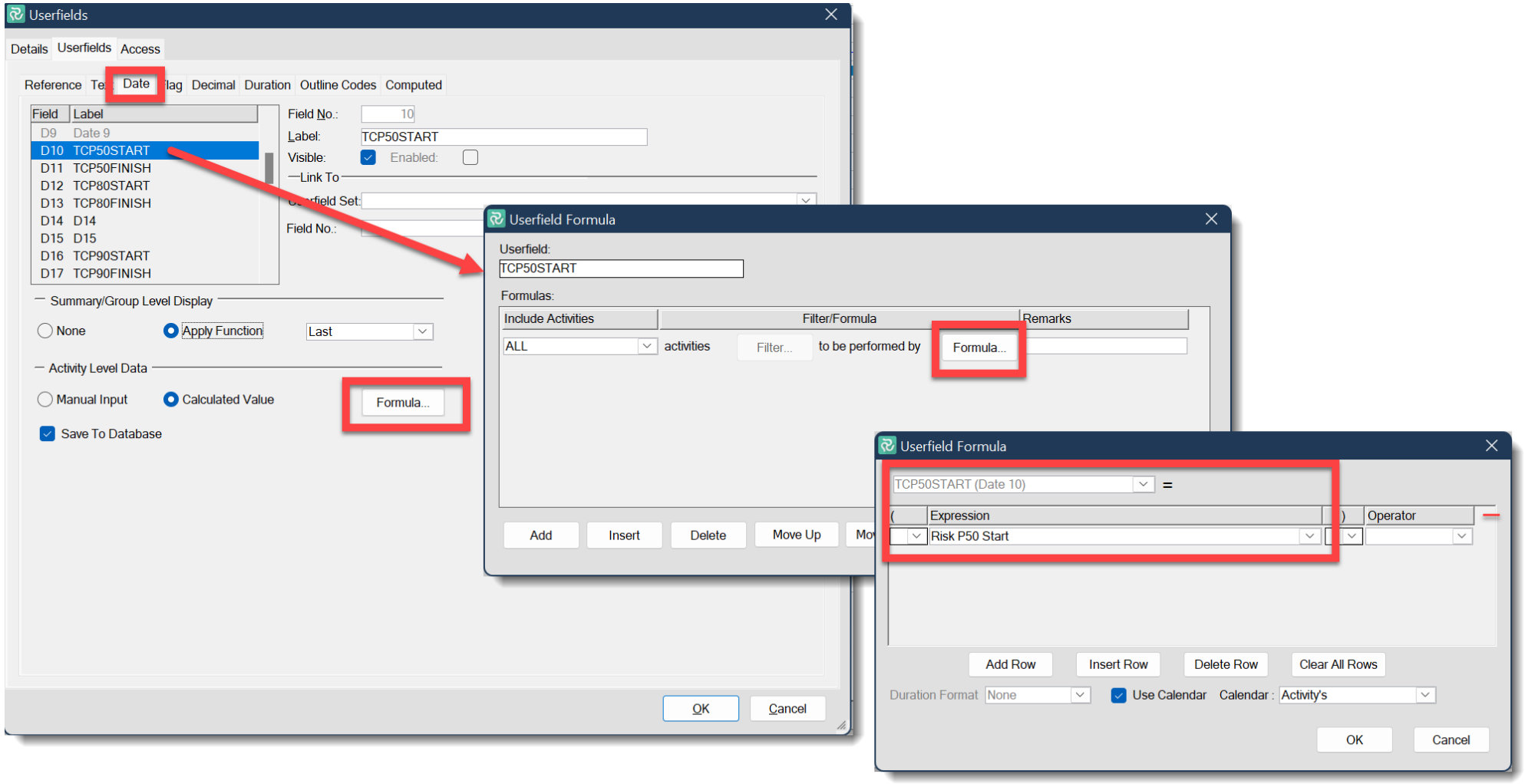
Activity Level Data
Manual Input
Calculated Value
Formula...

# Safran Risk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Field
Label
D9 Date 9
D10 TCP50START
D11 TCP50FINISH
D12 TCP80START
D13 TCP80FINISH
D14 D14
D15 D15
D16 TCP90START
D17 TCP90FINISH
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Formula...
Save To Database
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Cancel
Userfield Formula
Userfield:
TCP50START
Formulas:
Include Activities
Filter/Formula
Remarks
ALL
activities
Filter...
to be performed by
Formula...
Add
Insert
Delete
Move Up
Userfield Formula
TCP50START (Date 10)
=
Expression
Operator
Risk P50 Start
Add Row
Insert Row
Delete Row
Clear All Rows
Duration Format
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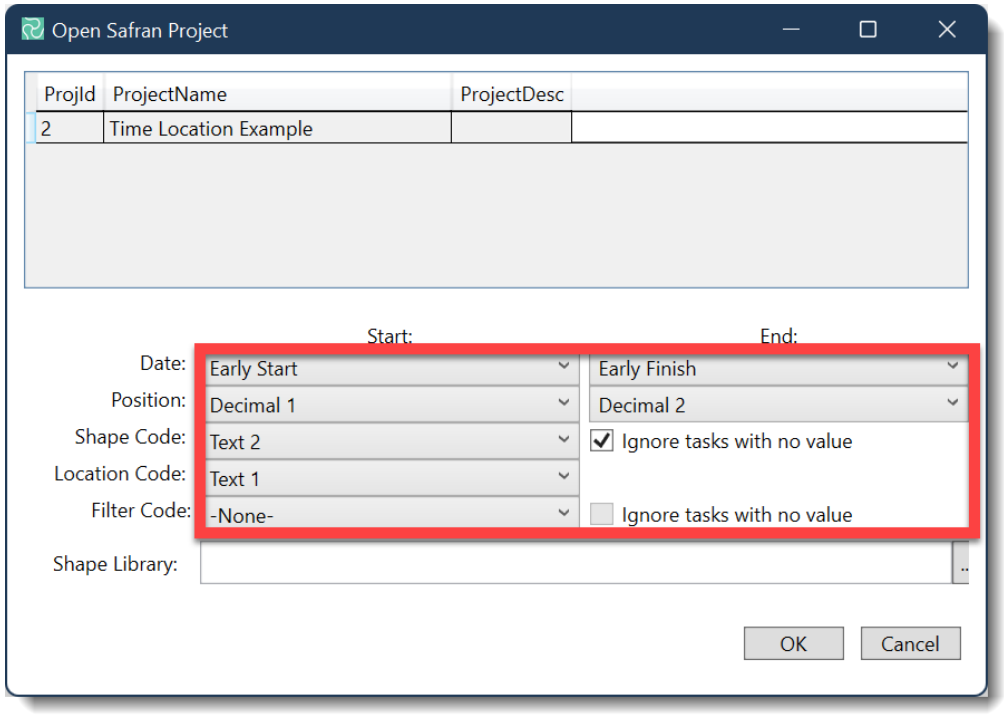
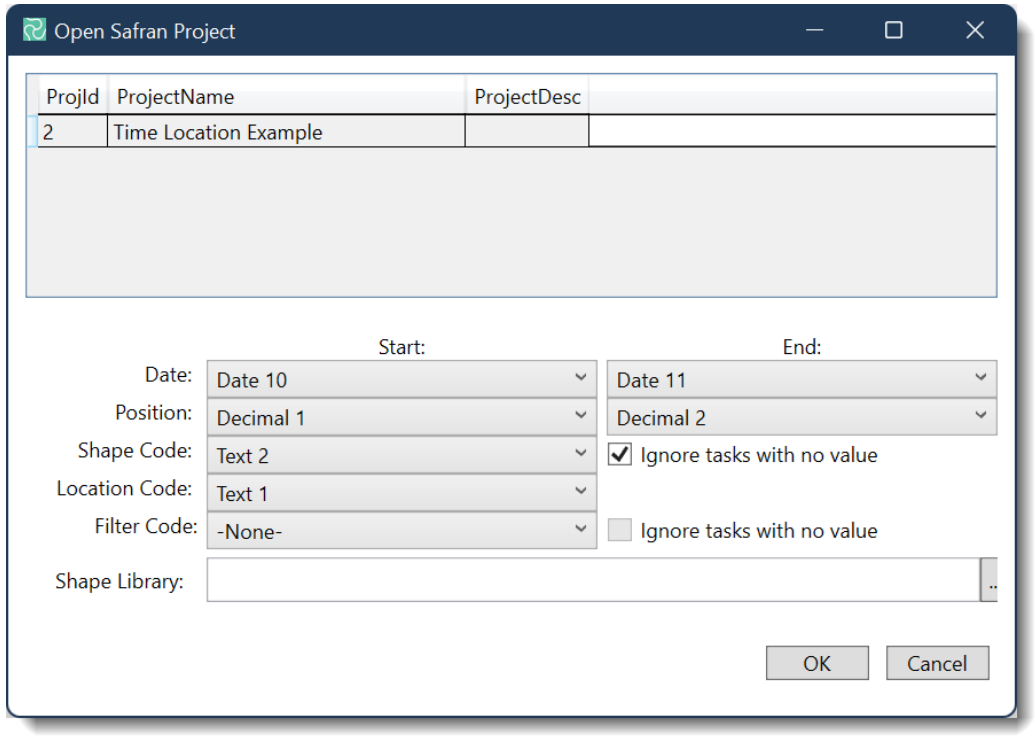
Use Calendar
Calendar :
Activity's
OK
Cancel

# Safran Risk

## Planned/Actual

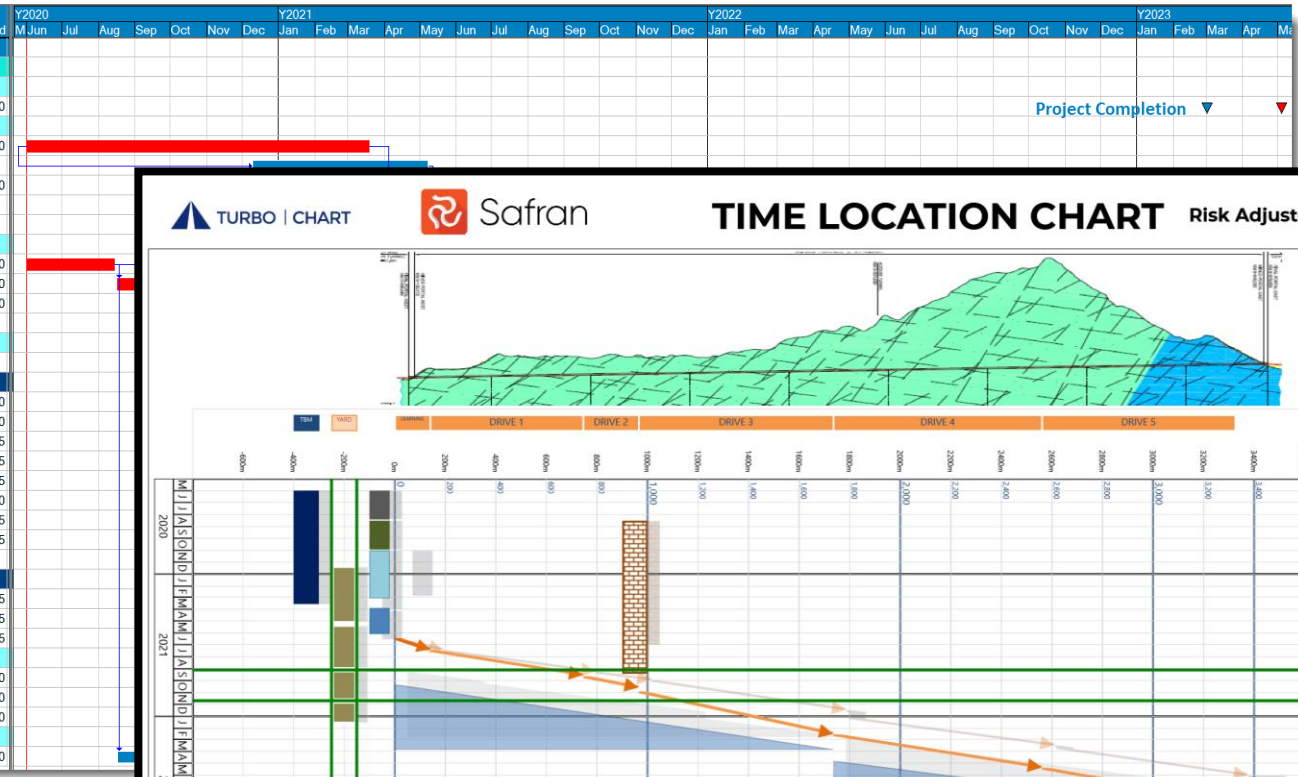



## Risk Dates



# Safran Risk

| Activity ID | Description | Duration | Start | Finish | Shape Code | Location Code | Start | End |
|---|---|---|---|---|---|---|---|---|
| TC_TUNNEL | TC SRA TUNNEL EXAMPLE | | | | | | | |
| TC_TUNNEL.TC_SRA | SRA TASKS | | | | | | | |
| TC_TUNNEL.TC_SRA.M | Key Milestones | | | | | | | |
| TC_SRA_350 | Project Completion | 0 | 03-May-23 | 03-May-23 | KEYM | PROJECT | 3,375 | -400 |
| TC_TUNNEL.TC_SRA.1 | Procurement | | | | | | | |
| TC_SRA_0090 | TBM Design, Manufacture & Deliver | 190 d | 01-Jun-20 | 19-Mar-21 | TBM_MAN | OFFSITE | -400 | -300 |
| TC_SRA_0099 | Precast Yard Establishment | 150 d | 10-Dec-20 | 08-May-21 | PRECAST | YARD | | |
| TC_SRA_0100 | Precast Yard Production 1 | 80 d | 10-May-21 | 03-Sep-21 | PRECAST | YARD | -250 | -150 |
| TC_SRA_0110 | Precast Yard Production 2 | 80 d | 04-Sep-21 | 22-Nov-21 | PRECAST | YARD | | |
| TC_SRA_0120 | Precast Yard Production 3 | 60 d | 23-Nov-21 | 21-Jan-22 | PRECAST | YARD | | |
| TC_TUNNEL.TC_SRA.2 | Launch Shaft | | | | | | | |
| TC_SRA_0050 | Site Preparation | 55 d | 01-Jun-20 | 14-Aug-20 | SITE_PREP | SHAFT1 | -100 | -20 |
| TC_SRA_270 | Utilities | 50 d | 17-Aug-20 | 30-Oct-20 | UTIL | SHAFT1 | -100 | -20 |
| TC_SRA_280 | Excavation and Supports | 90 d | 02-Nov-20 | 02-Apr-21 | EXCV | SHAFT1 | -100 | -20 |
| TC_SRA_290 | Tunnelling Auxiliary Services | 70 d | 02-Nov-20 | 26-Feb-21 | | | | |
| TC_TUNNEL.TC_SRA.3 | Tunnel | | | | | | | |
| TC_SRA_370 | Tunnelling Summary (3,325m) | 253 d | 21-Jun-21 | 20-Jul-22 | | | | |
| TC_TUNNEL.TC_SRA.3 | Tunnel - TBM | | | | | | | |
| TC_SRA_0200 | Assembly | 50 d | 05-Apr-21 | 18-Jun-21 | TBM_ASSM | SHAFT1 | -100 | -20 |
| TC_SRA_0210 | Learning Curve 140m | 18 d | 21-Jun-21 | 14-Jul-21 | TBM_LEARN | DRIVE0 | | 140 |
| TC_SRA_210 | Drive 1 605m | 40 d | 15-Jul-21 | 08-Sep-21 | TBM_DRIVE | DRIVE1 | 140 | 745 |
| TC_SRA_220 | Drive 2 220m | 15 d | 09-Sep-21 | 29-Sep-21 | TBM_DRIVE | DRIVE2 | 745 | 965 |
| TC_SRA_230 | Drive 3 770m | 50 d | 30-Sep-21 | 15-Dec-21 | TBM_DRIVE | DRIVE3 | 965 | 1,735 |
| TC_SRA_240 | Drive 4 825m | 50 d | 16-Dec-21 | 16-Mar-22 | TBM_DRIVE | DRIVE4 | 1,735 | 2,560 |
| TC_SRA_250 | Drive 5 765m | 50 d | 17-Mar-22 | 01-Jun-22 | TBM_DRIVE | DRIVE5 | 2,560 | 3,325 |
| TC_SRA_260 | Dis-assembly | 30 d | 02-Jun-22 | 20-Jul-22 | TBM_DISS | RETRIEVAL | 3,325 | 3,475 |
| TC_SRA_360 | Tunnelling Completion | 0 | 20-Jul-22 | 20-Jul-22 | | | | |
| TC_TUNNEL.TC_SRA.3 | Tunnel - Fitout | | | | | | | |
| TC_SRA_310 | Tunnel Infill Concrete (DR1-3) | 100 d | 09-Sep-21 | 23-Feb-22 | INFILL | DRIVE8 | | 1,735 |
| TC_SRA_320 | Tunnel Fitout | 80 d | 21-Jul-22 | 16-Nov-22 | FITOUT | DRIVE10 | | 3,325 |
| TC_SRA_380 | Tunnel Infill Concrete (DR4-5) | 90 d | 24-Feb-22 | 13-Jul-22 | INFILL | DRIVE9 | 1,735 | 3,325 |
| TC_TUNNEL.TC_SRA.4 | Cut & Cover Structure | | | | | | | |
| TC_SRA_300 | C&C - Stage 1 | 80 d | 21-Jul-22 | 16-Nov-22 | C&C | RETRIEVAL | 20 | 100 |
| TC_SRA_330 | C&C - Stage 2 | 50 d | 17-Nov-22 | 15-Feb-23 | C&C | RETRIEVAL | 20 | 100 |
| TC_SRA_340 | Reinstatement Works | 50 d | 16-Feb-23 | 03-May-23 | REINSTATE | RETRIEVAL | 20 | 100 |
| TC_TUNNEL.TC_SRA.5 | Ground Improvement | | | | | | | |
| TC_SRA_0080 | Ground Improvement Works | 200 d | 17-Aug-20 | 02-Jul-21 | IMPROVEMENT | GEO | 900 | 1,000 |



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# Thank You (again).