

Generate Report

The **Generate Report** endpoint accepts data about a customer's finances and lending scenario, along with lenders to calculate the report for. The endpoint may take a few seconds to generate a report which consists of a single loan amount case for each of the specified lenders.

Request

- Type: `POST`
 - Path: `/engine/generate-report`
-

Endpoint

The Generate Report endpoint can be accessed from the following URLs:

Environment	Endpoint URL
Test	<code>https://api.mre.test.blackfin.tools/engine/generate-report</code>
Production	<code>https://api.mre.blackfin.tools/engine/generate-report</code>

Authentication

An `API_Key` is required to call this endpoint. [HTTP Bearer Token authentication](#) is used.

JSON Schema

The request payload is sent as HTTP JSON body using the following schema:

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "title": "Request JSON Payload",
  "type": "object",
  "properties": {
    "Details": {
      "type": "object",
      "description": "Main calculation details for mortgage calculation, see
[CalculationDetails](https://docs.blackfin.tools/books/mortgagerecenginebackend/page/calculati
ondetails) schema"
    },
    "Lenders": {
      "type": "array",
      "description": "[Lender
codes](https://docs.blackfin.tools/books/mortgagerecenginemycrm/page/lenders) to include in
calculation. If no Lenders are passed (empty array), the calc will return ASB, ANZ, BNZ, AIA
and Westpac by default",
      "items": {
        "type": "string",
        "description": "",
        "enum": [
          "aia",
          "anz",
          "asb",
          "bnz",
          "co-op",
          "kiwibank",
          "liberty",
          "sbs",
          "tsb",
          "westpac"
        ]
      }
    }
  },
  "required": [
    "Details",
    "Lenders"
  ]
}
```

```
]
}
```

Examples

Example request payload:

JSON Request Body

```
{
  "Details": {
    "Loan": [
      {
        "LoanType": "New",
        "Lender": null,
        "LendingAction": null,
        "LiabilityType": "HomeLoan",
        "LoanAmount": 250000,
        "TopUpAmount": null,
        "TotalTermMonths": 180,
        "InterestOnlyTermMonths": 180,
        "Security": {
          "Value": 300000,
          "IsRBNZExempt": true,
          "Location": null,
          "PropertyType": [
            "ResidentialProperty",
            "FreeHoldResidential",
            null
          ],
          "SecurityType": "Proposed",
          "UsageType": "OwnerOccupied"
        },
        "LoanId": 1
      }
    ]
  }
}
```

```
},
{
  "LoanType": "Existing",
  "Lender": null,
  "LendingAction": "TopUp",
  "LiabilityType": "HomeLoan",
  "LoanAmount": 250000,
  "TopUpAmount": 50000,
  "TotalTermMonths": 183,
  "InterestOnlyTermMonths": 219,
  "Security": {
    "Value": 300000,
    "isRBNZExempt": false,
    "Location": null,
    "PropertyType": [
      "ResidentialProperty",
      "FreeHoldResidential",
      null
    ],
    "SecurityType": "Existing",
    "UsageType": "OwnerOccupied"
  },
  "LoanId": 2
},
```

```
{
  "LoanType": "Existing",
  "Lender": null,
  "LendingAction": "Refinance",
  "LiabilityType": "HomeLoan",
  "LoanAmount": 260000,
  "TopUpAmount": null,
  "TotalTermMonths": 180,
  "InterestOnlyTermMonths": 216,
  "Security": {
    "Value": 300000,
    "isRBNZExempt": false,
    "Location": null,
    "PropertyType": [
      "ResidentialProperty",
```

```
        "FreeHoldResidential",
        null
    ],
    "SecurityType": "Proposed",
    "UsageType": "OwnerOccupied"
},
"LoanId": 3
},
{
    "LoanType": "Existing",
    "Lender": null,
    "LendingAction": "Refinance",
    "LiabilityType": "HomeLoan",
    "LoanAmount": 370000,
    "TopUpAmount": null,
    "TotalTermMonths": 144,
    "InterestOnlyTermMonths": 0,
    "Security": {
        "Value": 410000,
        "isRBNZExempt": false,
        "Location": null,
        "PropertyType": [
            null,
            null,
            null
        ],
        "SecurityType": "Proposed",
        "UsageType": null
    },
    "LoanId": 4
},
{
    "LoanType": "Existing",
    "Lender": null,
    "LendingAction": "TopUp",
    "LiabilityType": "HomeLoan",
    "LoanAmount": 200000,
    "TopUpAmount": 50000,
    "TotalTermMonths": 180,
```

```
"InterestOnlyTermMonths": 0,
"Security": {
  "Value": 210000,
  "isRBNZExempt": false,
  "Location": null,
  "PropertyType": [
    null,
    null,
    null
  ],
  "SecurityType": "Proposed",
  "UsageType": null
},
"LoanId": 5
},
],
"ApplicantParty": [
  {
    "Applicant": [
      {
        "ApplicantId": 1,
        "Name": "Terence"
      },
      {
        "ApplicantId": 2,
        "Name": "Eve"
      }
    ]
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "ChildCare",
    "Frequency": "Monthly",
    "Amount": 300
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "ChildMaintenance",
    "Frequency": "Monthly",
```

```
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "HigherEducationAndVocationalTraining",
    "Frequency": "Monthly",
    "Amount": 200
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "OtherEducation",
    "Frequency": "Monthly",
    "Amount": 100
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "PrivateSchoolCosts",
    "Frequency": "Monthly",
    "Amount": 300
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "PublicSchoolCosts",
    "Frequency": "Monthly",
    "Amount": 150
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "Groceries",
    "Frequency": "Monthly",
    "Amount": 200
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "OtherGroceries",
    "Frequency": "Monthly",
    "Amount": 150
  },
  {
```

```
"ApplicantId": 1,
"ExpenseType": "BodyCorporatePrimaryResidence",
"Frequency": "Monthly",
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "CouncilRatesPrimaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "ElectricityAndGasPrimaryResidence",
  "Frequency": "Monthly",
  "Amount": 100
},
{
  "ApplicantId": 1,
  "ExpenseType": "FurnishingsAndElectrical",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "HomeOperation",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "HomeRepairs",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "OtherPrimaryResidenceExpense",
  "Frequency": "Monthly",
```

```
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "WaterAndSewerPrimaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "BuildingInsurance",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "ContentsInsurance",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "HealthInsurance",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "IncomeProtection",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "LifeInsurance",
  "Frequency": "Monthly",
  "Amount": 10
},
{
```

```
"ApplicantId": 1,
"ExpenseType": "OtherInsurance",
"Frequency": "Monthly",
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "VehicleInsurance",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "BodyCorporateInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "BuildingInsuranceInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "CouncilRatesInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "ElectricityAndGasInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "OtherInvestmentPropertyExpense",
  "Frequency": "Monthly",
```

```
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "RepairsAndMaintenanceInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "RunningCostsInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "WaterAndSewerInvestmentProperty",
  "Frequency": "Monthly",
  "Amount": 200
},
{
  "ApplicantId": 1,
  "ExpenseType": "ContentsInsuranceSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "BodyCorporateSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "BuildingInsuranceSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
```

```
"ApplicantId": 1,
"ExpenseType": "CouncilRatesSecondaryResidence",
"Frequency": "Monthly",
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "ElectricityAndGasSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "OtherSecondaryResidenceExpense",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "RepairsAndMaintenanceSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "RunningCostsSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "WaterAndSewerSecondaryResidence",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "MedicalAndHealth",
  "Frequency": "Monthly",
```

```
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "NaturalTherapies",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "Board",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "DryCleaning",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "AlcoholTobacco",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "CinemaConcertsMemberships",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "GymSports",
  "Frequency": "Monthly",
  "Amount": 10
},
{
```

```
"ApplicantId": 1,
"ExpenseType": "OtherRecreationalAndEntertainment",
"Frequency": "Monthly",
"Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "Pets",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "HomeMobilePhone",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "InternetPayTVAndMediaStreamingSubscriptions",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "PublicTransport",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "Registration",
  "Frequency": "Monthly",
  "Amount": 10
},
{
  "ApplicantId": 1,
  "ExpenseType": "TaxiRideSharing",
  "Frequency": "Monthly",
```

```
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "TollsParking",
    "Frequency": "Monthly",
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "Kiwisaver",
    "Frequency": "Monthly",
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "RegularDonations",
    "Frequency": "Monthly",
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "VoluntarySaving",
    "Frequency": "Monthly",
    "Amount": 10
  },
  {
    "ApplicantId": 1,
    "ExpenseType": "VoluntarySuper",
    "Frequency": "Monthly",
    "Amount": 10
  }
],
"Income": [
  {
    "ApplicantId": 1,
    "Frequency": "Yearly",
    "Amount": 50000,
    "AmountType": "Gross",
```

```
    "IncomeType": "SalaryWages",
    "Attributes": []
  },
  {
    "ApplicantId": 1,
    "Frequency": "Yearly",
    "Amount": 5000,
    "AmountType": "Gross",
    "IncomeType": "RentalIncome",
    "Attributes": [
      {
        "name": "PropertyBuildDate",
        "value": "2018-11-06"
      },
      {
        "name": "PropertyCountry",
        "value": "NZ"
      },
      {
        "name": "IsTaxExempt",
        "value": true
      },
      {
        "name": "SalePurchaseDate",
        "value": "2019-11-11"
      }
    ]
  },
  {
    "ApplicantId": 2,
    "Frequency": "Yearly",
    "Amount": 40000,
    "AmountType": "Gross",
    "IncomeType": "SalaryWages",
    "Attributes": []
  },
  {
    "ApplicantId": 2,
    "Frequency": "Yearly",
```

```
"Amount": 5000,
"AmountType": "Gross",
"IncomeType": "WorkAllowance",
"Attributes": []
},
{
  "ApplicantId": 1,
  "Frequency": "Yearly",
  "Amount": 10000,
  "AmountType": "Gross",
  "IncomeType": "Bonus",
  "Attributes": []
},
{
  "ApplicantId": 1,
  "Frequency": "Yearly",
  "Amount": 4000,
  "AmountType": "Gross",
  "IncomeType": "BoarderIncome",
  "Attributes": [
    {
      "name": "BoarderIncomeType",
      "value": "AllInclusive"
    }
  ]
},
{
  "ApplicantId": 1,
  "Frequency": "Yearly",
  "Amount": 3000,
  "AmountType": "Gross",
  "IncomeType": "CarAllowance",
  "Attributes": []
},
{
  "ApplicantId": 1,
  "Frequency": "Yearly",
  "Amount": 5000,
  "AmountType": "Gross",
```

```
    "IncomeType": "FamilyAllowance",
    "Attributes": []
  }
],
"Liability": [
  {
    "ApplicantId": 1,
    "LiabilityType": "HomeLoan",
    "RepaymentAmount": 2000,
    "RepaymentFrequency": "Monthly",
    "Limit": 4000,
    "Balance": 10000,
    "InterestRate": 0.02,
    "RepaymentType": "PrincipalInterest",
    "StartDate": "2017-11-15",
    "TotalTermMonths": 228,
    "InterestOnlyTermMonths": 228,
    "Lender": "Kiwibank",
    "IsRevolvingCredit": true
  },
  {
    "ApplicantId": 1,
    "LiabilityType": "CreditCard",
    "RepaymentAmount": null,
    "RepaymentFrequency": null,
    "Limit": 30000,
    "Balance": null,
    "InterestRate": null,
    "RepaymentType": null,
    "StartDate": null,
    "TotalTermMonths": null,
    "InterestOnlyTermMonths": null,
    "Lender": null,
    "IsRevolvingCredit": null
  },
  {
    "ApplicantId": 1,
    "LiabilityType": "PersonalLoan",
    "RepaymentAmount": 2000,
```

```
"RepaymentFrequency": "Monthly",
"Limit": 4000,
"Balance": 30000,
"InterestRate": 0.02,
"RepaymentType": null,
"StartDate": "2019-11-07",
"TotalTermMonths": 220,
"InterestOnlyTermMonths": null,
"Lender": null,
"IsRevolvingCredit": true
},
{
  "ApplicantId": 1,
  "LiabilityType": "Other",
  "RepaymentAmount": 200,
  "RepaymentFrequency": "Monthly",
  "Limit": 4000,
  "Balance": 10000,
  "InterestRate": 0.01,
  "RepaymentType": null,
  "StartDate": "2018-11-07",
  "TotalTermMonths": 183,
  "InterestOnlyTermMonths": null,
  "Lender": "Kiwibank",
  "IsRevolvingCredit": true
},
{
  "ApplicantId": 1,
  "LiabilityType": "HirePurchase",
  "RepaymentAmount": 2000,
  "RepaymentFrequency": "Monthly",
  "Limit": null,
  "Balance": 20000,
  "InterestRate": null,
  "RepaymentType": null,
  "StartDate": null,
  "TotalTermMonths": null,
  "InterestOnlyTermMonths": null,
  "Lender": null,
```

```
    "IsRevolvingCredit": null
  },
  {
    "ApplicantId": 1,
    "LiabilityType": "Overdraft",
    "RepaymentAmount": 2000,
    "RepaymentFrequency": "Monthly",
    "Limit": 4000,
    "Balance": 20000,
    "InterestRate": 0.02,
    "RepaymentType": null,
    "StartDate": null,
    "TotalTermMonths": null,
    "InterestOnlyTermMonths": null,
    "Lender": null,
    "IsRevolvingCredit": null
  },
  {
    "LoanId": 2,
    "Lender": null,
    "Balance": 195000,
    "Limit": 250000,
    "InterestRate": 1,
    "RepaymentAmount": 15000,
    "RepaymentFrequency": "Monthly",
    "RepaymentType": null,
    "TotalTermMonths": 183,
    "StartDate": null,
    "IsRevolvingCredit": null,
    "InterestOnlyTermMonths": 216,
    "ApplicantId": 1,
    "LiabilityType": "HomeLoan"
  },
  {
    "Lender": null,
    "Balance": 200000,
    "Limit": 260000,
    "InterestRate": 2,
    "RepaymentAmount": 10000,
```

```
    "RepaymentFrequency": "Monthly",
    "RepaymentType": "PrincipalInterest",
    "TotalTermMonths": 180,
    "StartDate": null,
    "IsRevolvingCredit": null,
    "InterestOnlyTermMonths": 216,
    "ApplicantId": 1,
    "LiabilityType": "HomeLoan",
    "LoanId": 3
  }
],
  "NumberOfDependents": 1,
  "NumberOfVehicles": 1
}
]
},
"Lenders": []
}
```

Validation

The API performs basic validation on the structure of the request payload but does not impose strict rules based on what is required for generating a calculation. Same rules are applied as for create session endpoint, **this will be fixed eventually to throw an error when there is insufficient data.**

Response

Success

If the Generate Report completes successfully:

JSON Body

```
{
  "$schema": "http://json-schema.org/draft-07/schema#",
  "title": "Result Response Schema",
  "type": "object",
  "properties": {
    "Result": {
      "type": "object",
      "description": "Contains the calculation results",
      "properties": {
        "Report": {
          "type": "object",
          "description": "Report details and results. See [this
schema](https://docs.blackfin.tools/books/mortgagerecenginebackend/page/report) for more
information."
        }
      },
      "required": ["Report"]
    },
    "ReportId": {
      "type": "string",
      "description": "Unique identifier for the report"
    }
  },
  "required": ["Result", "ReportId"]
}
```

Examples

200: Success

Success Response

```
{
  "Result": {
    "Report": {
      "Id": "7Z0nc3ZJ",
      "Cases": [
        {
          "Id": 1,
          "LoanAmount": 350000,
          "LenderResult": [
            {
              "Lender": {
                "Id": 1,
                "Key": "aia",
                "Name": "AIA",
                "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/aia.png"
              },
              "Result": {
                "AssessedIncome": [
                  {
                    "Group": "Applicant Income",
                    "Label": "Total Income (Gary) - including Salary",
                    "Entered": {
                      "Amount": null,
                      "Frequency": null
                    },
                    "Assessed": {
                      "Amount": 5472,
                      "Frequency": "Monthly"
                    }
                  },
                  {
                    "Group": "Applicant Income",
                    "Label": "Total Income (Lynne) - including
Salary",
                    "Entered": {
                      "Amount": null,
                      "Frequency": null
                    }
                  }
                ]
              }
            }
          ]
        }
      ]
    }
  }
}
```

```
        "Assessed": {
            "Amount": 3368,
            "Frequency": "Monthly"
        }
    },
    ],
    "AssessedExpense": [
        {
            "Group": "Lending",
            "Label": "New Home Loan",
            "Entered": {
                "Amount": 350000,
                "InterestRate": 0.067
            },
            "Assessed": {
                "Amount": 2258.47,
                "Frequency": "Monthly"
            }
        },
        {
            "Group": "Lending",
            "Label": "Credit Card",
            "Entered": {
                "Amount": 10000,
                "Definition": "Limit"
            },
            "Assessed": {
                "Amount": 0,
                "Frequency": "Monthly"
            }
        },
        {
            "Group": "Living Expenses",
            "Label": "Food",
            "Entered": {
                "Amount": 700,
                "Frequency": "Monthly"
            },
            "Assessed": {
```

```
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "Utilities",
    "Entered": {
        "Amount": 400,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "Ongoing Household Expenses",
    "Entered": {
        "Amount": 100,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "ChildCare",
    "Entered": {
        "Amount": 250,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
}
```

```
    },
    {
      "Group": "Living Expenses",
      "Label": "Health/Medical/Funeral/Pet Insurance",
      "Entered": {
        "Amount": 480,
        "Frequency": "Monthly"
      },
      "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
      }
    },
    {
      "Group": " Living Expenses",
      "Label": "Minimum Living Expenses",
      "Entered": {
        "Amount": 1930,
        "Frequency": "Monthly"
      },
      "Assessed": {
        "Amount": 2876,
        "Frequency": "Monthly"
      }
    }
  ],
  "TotalMonthlyIncome": 8840,
  "TotalMonthlyExpense": 2558.47,
  "UMI": {
    "Value": 3405.53,
    "Required": 120,
    "Status": "Pass",
    "SecurityUsageType": "OwnerOccupied",
    "LvrValue": 0.7
  },
  "Servicing": {
    "Type": "N/A",
    "Value": 0,
    "Required": 0,
```

```
    "Status": "Fail"
  },
  "LVR": [
    {
      "Reference": "Result.LVR.LVRLimit[0]",
      "LoanId": 1,
      "LVRLimit": [
        {
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          "Description": "Unknown",
          "MaxLVR": 0.9
        },
        {
          "Label": "Usage Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        }
      ],
      "Value": 0.7,
      "RequiredMaxLVR": 0.9,
      "Status": "Pass"
    }
  ],
  "LEM": [],
  "DTI": {
    "TotalIncome": 133000,
    "TotalDebt": 360000,
    "Value": 2.71,
    "RequiredMaxDTI": 7,
    "Status": "Pass"
  },
  "Deposit": {
    "Amount": 0
  },
  "MaxLoanAmount": 859100
},
"Warnings": [
  {
    "Message": "Entered Living Expenses of $1930 is below
```

minimum expected (\$2876)",

```
        "Reference": "Result.Expenses"
      }
    ],
    "Errors": [],
    "Resources": [
      {
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[1]",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/aia_UsageType.png"
      }
    ],
    "Accuracy": 0.69,
    "Version": {
      "VersionNumber": "v2.80",
      "ReleaseDate": "2025-11-26",
      "VersionReleaseNote": ""
    },
    "SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=aia"
  },
  {
    "Lender": {
      "Id": 2,
      "Key": "anz",
      "Name": "ANZ",
      "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/anz.png"
    },
    "Result": {
      "AssessedIncome": [
        {
          "Group": "Customer Income",
          "Label": "Customer Income (Gary)",
          "Entered": {
            "Amount": 85000,
            "Frequency": "Yearly"
          }
        }
      ]
    }
  }
}
```

```
    },
    "Assessed": {
      "Amount": 5471.08,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Customer Income",
    "Label": "Customer Income (Lynne)",
    "Entered": {
      "Amount": 4000,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 3324.2,
      "Frequency": "Monthly"
    }
  }
],
"AssessedExpense": [
  {
    "Group": "Lending",
    "Label": "New Home Loan",
    "Entered": {
      "Amount": 350000,
      "InterestRate": 0.067
    },
    "Assessed": {
      "Amount": 2258.47,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Other Liabilities",
    "Label": "Credit Cards",
    "Entered": {
      "Amount": 10000,
      "Definition": "Limit"
    },
  },
```

```
        "Assessed": {
            "Amount": 400,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Living Expenses",
        "Label": "All Living Expenses",
        "Entered": {
            "Amount": 1100,
            "Frequency": "Monthly"
        },
        "Assessed": {
            "Amount": 2198,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Living Expenses",
        "Label": "Other Significant Expenses",
        "Entered": {
            "Amount": 730,
            "Frequency": "Monthly"
        },
        "Assessed": {
            "Amount": 730,
            "Frequency": "Monthly"
        }
    }
],
"TotalMonthlyIncome": 8795.28,
"TotalMonthlyExpense": 5586.47,
"UMI": {
    "Value": 3208.81,
    "Required": 100,
    "Status": "Pass"
},
"Servicing": {
    "Type": "N/A",
```

```
    "Value": 0,
    "Required": 0,
    "Status": "Fail"
  },
  "LVR": [
    {
      "Reference": "Result.LVR.LVRLimit[0]",
      "SecurityId": 1,
      "LVRLimit": [
        {
          "Label": "Property Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        },
        {
          "Label": "Usage Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        }
      ],
      "Value": 0.7,
      "RequiredMaxLVR": 0.9,
      "Status": "Pass"
    }
  ],
  "LEM": [],
  "DTI": {
    "TotalIncome": 0,
    "TotalDebt": 0,
    "Value": 0,
    "RequiredMaxDTI": "N/A",
    "Status": "N/A"
  },
  "Deposit": {
    "Amount": 0
  },
  "MaxLoanAmount": 831700
},
"Warnings": [],
```

```
"Errors": [],
"Resources": [
  {
    "Type": "Image",
    "Reference": "Result.LVR.LVRLimit[0]",
    "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/anz_PropertyType.jpg"
  },
  {
    "Type": "Image",
    "Reference": "Result.LVR.LVRLimit[1]",
    "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/anz_UsageType.jpg"
  }
],
"Accuracy": 0.69,
"Version": {
  "VersionNumber": "v10.9",
  "ReleaseDate": "2025-10-23",
  "VersionReleaseNote": ""
},
"SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=anz"
},
{
  "Lender": {
    "Id": 3,
    "Key": "asb",
    "Name": "ASB",
    "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/asb.png"
  },
  "Result": {
    "AssessedIncome": [
      {
        "Group": "Applicant Income",
        "Label": "Total Income (Gary) - including Salary",
        "Entered": {
```

Salary",

```
        "Amount": null,
        "Frequency": null
    },
    "Assessed": {
        "Amount": 5472,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Applicant Income",
    "Label": "Total Income (Lynne) - including

    "Entered": {
        "Amount": null,
        "Frequency": null
    },
    "Assessed": {
        "Amount": 3368,
        "Frequency": "Monthly"
    }
}
],
"AssessedExpense": [
    {
        "Group": "Lending",
        "Label": "New Home Loan",
        "Entered": {
            "Amount": 350000,
            "InterestRate": 0.067
        },
        "Assessed": {
            "Amount": 2258.47,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Lending",
        "Label": "Credit Card",
        "Entered": {
```

```
        "Amount": 10000,
        "Definition": "Limit"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "Food",
    "Entered": {
        "Amount": 700,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "Utilities",
    "Entered": {
        "Amount": 400,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 0,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Living Expenses",
    "Label": "Ongoing Household Expenses",
    "Entered": {
        "Amount": 100,
        "Frequency": "Monthly"
    },
}
```

```
"Assessed": {
  "Amount": 0,
  "Frequency": "Monthly"
},
{
  "Group": "Living Expenses",
  "Label": "ChildCare",
  "Entered": {
    "Amount": 250,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 0,
    "Frequency": "Monthly"
  },
},
{
  "Group": "Living Expenses",
  "Label": "Health/Medical/Funeral/Pet Insurance",
  "Entered": {
    "Amount": 480,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 0,
    "Frequency": "Monthly"
  },
},
{
  "Group": " Living Expenses",
  "Label": "Minimum Living Expenses",
  "Entered": {
    "Amount": 1930,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 2876,
    "Frequency": "Monthly"
  },
}
```

```
    }
  }
],
"TotalMonthlyIncome": 8840,
"TotalMonthlyExpense": 2558.47,
"UMI": {
  "Value": 3405.53,
  "Required": 120,
  "Status": "Pass",
  "SecurityUsageType": "OwnerOccupied",
  "LvrValue": 0.7
},
"Servicing": {
  "Type": "N/A",
  "Value": 0,
  "Required": 0,
  "Status": "Fail"
},
"LVR": [
  {
    "Reference": "Result.LVR.LVRLimit[0]",
    "LoanId": 1,
    "LVRLimit": [
      {
        "Label": "Property Type",
        "Description": "Unknown",
        "MaxLVR": 0.9
      },
      {
        "Label": "Usage Type",
        "Description": "Unknown",
        "MaxLVR": 0.9
      }
    ],
    "Value": 0.7,
    "RequiredMaxLVR": 0.9,
    "Status": "Pass"
  }
],
```

```
    "LEM": [],
    "DTI": {
      "TotalIncome": 133000,
      "TotalDebt": 360000,
      "Value": 2.71,
      "RequiredMaxDTI": 7,
      "Status": "Pass"
    },
    "Deposit": {
      "Amount": 0
    },
    "MaxLoanAmount": 859100
  },
  "Warnings": [
    {
      "Message": "Entered Living Expenses of $1930 is below
minimum expected ($2876)",
      "Reference": "Result.Expenses"
    }
  ],
  "Errors": [],
  "Resources": [
    {
      "Type": "Image",
      "Reference": "Result.LVR.LVRLimit[1]",
      "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/asb_UsageType.png"
    },
    {
      "Type": "Image",
      "Reference": "Result.DTI",
      "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/asb_DTI.png"
    }
  ],
  "Accuracy": 0.69,
  "Version": {
    "VersionNumber": "v2.80",
    "ReleaseDate": "2025-11-26",
```

```
        "VersionReleaseNote": ""
    },
    "SpreadsheetFileURL":
    "https://api.mre.test.blackfin.tools/engine/download-
    spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=asb"
    },
    {
        "Lender": {
            "Id": 4,
            "Key": "bnz",
            "Name": "BNZ",
            "Logo": "https://storage.googleapis.com/mortgage-rec-
            engine-dev.appspot.com/lender-logos/bnz.png"
        },
        "Result": {
            "AssessedIncome": [
                {
                    "Group": "Customer Income",
                    "Label": "Customer Income (Gary)",
                    "Entered": {
                        "Amount": 85000,
                        "Frequency": "Yearly"
                    },
                    "Assessed": {
                        "Amount": 65653,
                        "Frequency": "Monthly"
                    }
                },
                {
                    "Group": "Customer Income",
                    "Label": "Customer Income (Lynne)",
                    "Entered": {
                        "Amount": 48000,
                        "Frequency": "Yearly"
                    },
                    "Assessed": {
                        "Amount": 39890.4,
                        "Frequency": "Monthly"
                    }
                }
            ]
        }
    }
}
```

```
    }
  ],
  "AssessedExpense": [
    {
      "Group": "Lending",
      "Label": "New Home Loan",
      "Entered": {
        "Amount": 350000,
        "InterestRate": 0.0685
      },
      "Assessed": {
        "Amount": 2293.41,
        "Frequency": "Monthly"
      }
    },
    {
      "Group": "Other Financial Commitments",
      "Label": "Credit Cards",
      "Entered": {
        "Amount": 10000,
        "Definition": "Limit"
      },
      "Assessed": {
        "Amount": 380,
        "Frequency": "Monthly"
      }
    },
    {
      "Group": "Declared Living Expenses",
      "Label": "Childcare & Education",
      "Entered": {
        "Amount": 250,
        "Frequency": "m"
      },
      "Assessed": {
        "Amount": 250,
        "Frequency": "Monthly"
      }
    }
  ],
}
```

```
{
  "Group": "Declared Living Expenses",
  "Label": "Utilities",
  "Entered": {
    "Amount": 400,
    "Frequency": "m"
  },
  "Assessed": {
    "Amount": 400,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Declared Living Expenses",
  "Label": "Food & Groceries",
  "Entered": {
    "Amount": 700,
    "Frequency": "m"
  },
  "Assessed": {
    "Amount": 700,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Declared Living Expenses",
  "Label": "Insurances",
  "Entered": {
    "Amount": 480,
    "Frequency": "m"
  },
  "Assessed": {
    "Amount": 480,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Declared Living Expenses",
  "Label": "Other regular expenses",
```

```
        "Entered": {
            "Amount": 100,
            "Frequency": "m"
        },
        "Assessed": {
            "Amount": 100,
            "Frequency": "Monthly"
        }
    }
},
"TotalMonthlyIncome": 8795.28,
"TotalMonthlyExpense": 5839.41,
"UMI": {
    "Value": 2955.88,
    "Required": "N/A",
    "Status": "Pass"
},
"Servicing": {
    "Type": "N/A",
    "Value": 0,
    "Required": 0,
    "Status": "Fail"
},
"LVR": [
    {
        "Reference": "Result.LVR.LVRLimit[0]",
        "LoanId": 1,
        "LVRLimit": [
            {
                "Label": "Property Type",
                "Description": "Unknown",
                "MaxLVR": 0.8
            }
        ],
        "Value": 0.7,
        "RequiredMaxLVR": 0.8,
        "Status": "Pass"
    }
],
```

```
    "LEM": [],
    "DTI": {
      "TotalIncome": 133000,
      "TotalDebt": 360000,
      "Value": 2.71,
      "RequiredMaxDTI": "N/A",
      "Status": "N/A"
    },
    "Deposit": {
      "Amount": 0
    },
    "MaxLoanAmount": 762900
  },
  "Warnings": [
    {
      "Message": "Declared Living Expenses of $1930 is below
minimum expected ($3166)",
      "Reference": "Result.Expenses"
    }
  ],
  "Errors": [],
  "Resources": [
    {
      "Type": "Image",
      "Reference": "Result.LVR.LVRLimit[0]",
      "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/bnz_PropertyType.png"
    }
  ],
  "Accuracy": 0.69,
  "Version": {
    "VersionNumber": "v12.29",
    "ReleaseDate": "2025-10-23",
    "VersionReleaseNote": ""
  },
  "SpreadsheetFileURL":
  "https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=bnz"
},
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{
  "Lender": {
    "Id": 5,
    "Key": "co-op",
    "Name": "CO-OP",
    "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/coop.png"
  },
  "Result": {
    "AssessedIncome": [
      {
        "Group": "Gross Income",
        "Label": "Applicant 1",
        "Entered": {
          "Amount": 85000,
          "Frequency": "Annual"
        },
        "Assessed": {
          "Amount": 5476.04,
          "Frequency": "Monthly"
        }
      },
      {
        "Group": "Gross Income",
        "Label": "Applicant 2",
        "Entered": {
          "Amount": 4000,
          "Frequency": "Monthly"
        },
        "Assessed": {
          "Amount": 3327,
          "Frequency": "Monthly"
        }
      }
    ],
    "AssessedExpense": [
      {
        "Group": "Lending",
        "Label": "New Home Loan",
```

```
"Entered": {
  "Amount": 350000,
  "InterestRate": 0.065
},
"Assessed": {
  "Amount": 2212.24,
  "Frequency": "Monthly"
}
},
{
  "Group": "Fixed Commitments",
  "Label": "Life & Medical Insurance ",
  "Entered": {
    "Amount": 480,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 480,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Fixed Commitments",
  "Label": "Child Care",
  "Entered": {
    "Amount": 250,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 250,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Fixed Commitments",
  "Label": "Insurance Default",
  "Entered": {
    "Amount": 0,
    "Frequency": "Monthly"
  }
```

```
    },
    "Assessed": {
      "Amount": 152.19,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Living Expenses",
    "Label": "Benchmark Expenses",
    "Entered": {
      "Amount": 1200,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 2728.5,
      "Frequency": "Monthly"
    }
  }
],
"TotalMonthlyIncome": 8803.04,
"TotalMonthlyExpense": 6202.93,
"UMI": {
  "Value": 1195.94,
  "Required": 108.33,
  "Status": "Pass"
},
"Servicing": {
  "Type": "N/A",
  "Value": 0,
  "Required": 0,
  "Status": "Fail"
},
"LVR": [
  {
    "Reference": "Result.LVR.LVRLimit[0]",
    "LoanId": null,
    "SecurityId": 1,
    "LVRLimit": [
      {
```

```
        "Label": "Property Type",
        "Description": "Unknown",
        "MaxLVR": 0.9
    }
],
    "Value": 0.7,
    "RequiredMaxLVR": 0.9,
    "Status": "Pass"
}
],
"LEM": [
    {
        "Label": "Total Lending",
        "LoanId": null,
        "Assessed": 0.7,
        "Margin": null,
        "Amount": null
    }
],
"DTI": {
    "TotalIncome": 133000,
    "TotalDebt": 360000,
    "Value": 2.71,
    "RequiredMaxDTI": "N/A",
    "Status": "N/A"
},
"Deposit": {
    "Amount": 0
},
"MaxLoanAmount": 744200
},
"Warnings": [
    {
        "Message": "Entered Living Expenses are below minimum
expected (2728.5). Benchmark values have been used.",
        "Reference": "Result.Expenses"
    }
],
"Errors": [],
```

```
    "Resources": [
      {
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[0]",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/co-op_PropertyType.png"
      }
    ],
    "Accuracy": 0.69,
    "Version": {
      "VersionNumber": "v6.9",
      "ReleaseDate": "2025-08-26",
      "VersionReleaseNote": ""
    },
    "SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=co-op"
  },
  {
    "Lender": {
      "Id": 6,
      "Key": "kiwibank",
      "Name": "Kiwibank",
      "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/kiwibank.png"
    },
    "Result": {
      "AssessedIncome": [
        {
          "Group": "Customer Income",
          "Label": "Total Income (Gary) - including Salary
",
          "Entered": {
            "Amount": null,
            "Frequency": null
          },
          "Assessed": {
            "Amount": 5471.08,
            "Frequency": "Monthly"
```

```
    }
  },
  {
    "Group": "Customer Income",
    "Label": "Total Income (Lynne) - including Salary",
    "Entered": {
      "Amount": null,
      "Frequency": null
    },
    "Assessed": {
      "Amount": 3324.2,
      "Frequency": "Monthly"
    }
  }
],
"AssessedExpense": [
  {
    "Group": "Proposed Lending",
    "Label": "New Home Loan",
    "Entered": {
      "Amount": 350000,
      "InterestRate": 0.068
    },
    "Assessed": {
      "Amount": 2281.74,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Existing Debt Commitments",
    "Label": "Card 1",
    "Entered": {
      "Amount": 10000,
      "Definition": "Limit"
    },
    "Assessed": {
      "Amount": 500,
      "Frequency": "Monthly"
    }
  }
]
```

```
    }
  },
  {
    "Group": "Benchmarkable Expenses",
    "Label": "Groceries and Food",
    "Entered": {
      "Amount": 700,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 0,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Benchmarkable Expenses",
    "Label": "Electricity, Gas and Heating",
    "Entered": {
      "Amount": 400,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 0,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Benchmarkable Expenses",
    "Label": "Housing Repairs and Maintenance",
    "Entered": {
      "Amount": 100,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 0,
      "Frequency": "Monthly"
    }
  },
  {
```

(HEB)",

```
"Group": "Benchmarkable Expenses",
"Label": "Minimum Household Expenditure Benchmark

"Entered": {
  "Amount": 1200,
  "Frequency": "Monthly"
},
"Assessed": {
  "Amount": 2384.47,
  "Frequency": "Monthly"
}
},
{
  "Group": "Non Benchmarkable Expenses",
  "Label": "Insurance - Life, Health & Income",
  "Entered": {
    "Amount": 480,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 480,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Non Benchmarkable Expenses",
  "Label": "Child Care",
  "Entered": {
    "Amount": 250,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 250,
    "Frequency": "Monthly"
  }
}
},
"TotalMonthlyIncome": 8795.28,
"TotalMonthlyExpense": 5896.21,
```

```
"UMI": {
  "Value": 0,
  "Required": 0,
  "Status": "Fail"
},
"Servicing": {
  "Type": "NSR",
  "Value": 0.67,
  "Required": 1,
  "Status": "Pass"
},
"LVR": [
  {
    "Reference": "Result.LVR.LVRLimit[0]",
    "LoanId": null,
    "SecurityId": 1,
    "LVRLimit": [
      {
        "Label": "Property Type",
        "Description": "Unknown ",
        "MaxLVR": 0.9
      }
    ],
    "Value": 0.7,
    "RequiredMaxLVR": 0.9,
    "Status": "Pass"
  }
],
"LEM": [
  {
    "Label": "Total Lending",
    "LoanId": null,
    "Assessed": 0.7,
    "Margin": 0,
    "Amount": null
  }
],
"DTI": {
  "TotalIncome": 133000,
```

```
        "TotalDebt": 360000,
        "Value": 2.71,
        "RequiredMaxDTI": 6,
        "Status": "Pass"
    },
    "Deposit": {
        "Amount": 0
    },
    "MaxLoanAmount": 794600
},
"Warnings": [
    {
        "Message": "Entered Benchmarkable Expenses of $1200 is
below minimum expected ($2384.47)",
        "Reference": "Result.Expenses"
    }
],
"Errors": [],
"Resources": [
    {
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[0]",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/kiwibank_PropertyType.png"
    }
],
"Accuracy": 0.69,
"Version": {
    "VersionNumber": "v67.1",
    "ReleaseDate": "2025-11-24",
    "VersionReleaseNote": ""
},
"SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=kiwibank"
},
{
    "Lender": {
        "Id": 7,
```

```
    "Key": "liberty",
    "Name": "Liberty",
    "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/liberty.png"
  },
  "Result": {
    "AssessedIncome": [
      {
        "Group": "Gross Income",
        "Label": "Gross Income (Gary)",
        "Entered": {
          "Amount": 85000,
          "Frequency": "Yearly"
        },
        "Assessed": {
          "Amount": 5476.04,
          "Frequency": "Monthly"
        }
      },
      {
        "Group": "Gross Income",
        "Label": "Gross Income (Lynne)",
        "Entered": {
          "Amount": 48000,
          "Frequency": "Yearly"
        },
        "Assessed": {
          "Amount": 3327,
          "Frequency": "Monthly"
        }
      }
    ],
    "AssessedExpense": [
      {
        "Group": "Living Expenses",
        "Label": "Declared living expenses",
        "Entered": {
          "Amount": 1930,
          "Frequency": "Monthly"
        }
      }
    ]
  }
}
```

```
    },
    "Assessed": {
      "Amount": 3309,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Lending",
    "Label": "New Home Loan",
    "Entered": {
      "Amount": 350000,
      "InterestRate": 0.1
    },
    "Assessed": {
      "Amount": 2966,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Other Liabilities",
    "Label": "Credit Card",
    "Entered": {
      "Amount": 10000,
      "Definition": "Limit"
    },
    "Assessed": {
      "Amount": 380,
      "Frequency": "Monthly"
    }
  }
],
"TotalMonthlyIncome": 8803.04,
"TotalMonthlyExpense": 6655,
"UMI": {
  "Value": 2148.04,
  "Required": 0,
  "Status": "Pass"
},
"Servicing": {
```

```
    "Type": "N/A",
    "Value": 0,
    "Required": 0,
    "Status": "Fail"
  },
  "LVR": [
    {
      "Reference": "Result.LVR.LVRLimit[0]",
      "LoanId": null,
      "SecurityId": 1,
      "LVRLimit": [
        {
          "Label": "Usage Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        }
      ],
      "Value": 0.7,
      "RequiredMaxLVR": 0.9,
      "Status": "Pass"
    }
  ],
  "LEM": [],
  "DTI": {
    "TotalIncome": 0,
    "TotalDebt": 0,
    "Value": 0,
    "RequiredMaxDTI": "N/A",
    "Status": "N/A"
  },
  "Deposit": {
    "Amount": 0
  },
  "MaxLoanAmount": 603400
},
"Warnings": [
  {
    "Message": "Declared Living Expenses are below minimum
expected ($3309). Benchmark values have been used.",
```

```
        "Reference": "Result.Expenses"
      },
      {
        "Message": "This Max LVR includes a 10% Boost Loan.
Property types are assessed on a case-by-case basis.",
        "ReferenceObjectType": "Security",
        "ReferenceObjectId": 1,
        "Reference": "Result.LVR"
      }
    ],
    "Errors": [],
    "Resources": [
      {
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[0]",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/liberty_LVR.png"
      }
    ],
    "Accuracy": 0.69,
    "Version": {
      "VersionNumber": "",
      "ReleaseDate": "",
      "VersionReleaseNote": ""
    },
    "SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=liberty"
  },
  {
    "Lender": {
      "Id": 8,
      "Key": "sbs",
      "Name": "SBS",
      "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/sbs.png"
    },
    "Result": {
      "AssessedIncome": [
```

```
{
  "Group": "Applicant Income",
  "Label": "Gary",
  "Entered": {
    "Amount": 85000,
    "Frequency": "Yearly"
  },
  "Assessed": {
    "Amount": 5471.08,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Applicant Income",
  "Label": "Lynne",
  "Entered": {
    "Amount": 48000,
    "Frequency": "Yearly"
  },
  "Assessed": {
    "Amount": 3324.2,
    "Frequency": "Monthly"
  }
}
],
"AssessedExpense": [
  {
    "Group": "Lending",
    "Label": "New Home Loan",
    "Entered": {
      "Amount": 350000,
      "InterestRate": 0.065
    },
    "Assessed": {
      "Amount": 2212.24,
      "Frequency": "Monthly"
    }
  },
  {
```

```
    "Group": "Lending",
    "Label": "Total Credit/Store Card Limits",
    "Entered": {
      "Amount": 10000,
      "Definition": "Limit"
    },
    "Assessed": {
      "Amount": 380,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Living Expenses",
    "Label": "Living & Other Expenses",
    "Entered": {
      "Amount": 1930,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 3525,
      "Frequency": "Monthly"
    }
  }
],
"TotalMonthlyIncome": 8795.28,
"TotalMonthlyExpense": 6117.24,
"UMI": {
  "Value": 0,
  "Required": 0,
  "Status": "Fail"
},
"Servicing": {
  "Type": "NSR",
  "Value": 0.7,
  "Required": 0.95,
  "Status": "Pass"
},
"LVR": [
  {
```

```
        "Reference": "Result.LVR.LVRLimit[0]",
        "SecurityId": 1,
        "LVRLimit": [
            {
                "Label": "Property Type",
                "Description": "Unknown ",
                "MaxLVR": 0.8
            }
        ],
        "Value": 0.7,
        "RequiredMaxLVR": 0.8,
        "Status": "Pass"
    }
],
"LEM": [],
"DTI": {
    "TotalIncome": 133000,
    "TotalDebt": 360000,
    "Value": 2.71,
    "RequiredMaxDTI": 6,
    "Status": "Pass"
},
"Deposit": {
    "Amount": 0
},
"MaxLoanAmount": 738900
},
"Warnings": [
    {
        "Message": "Entered Living Expenses are below minimum
expected ($3525). Benchmark values have been used.",
        "Reference": "Result.Expenses"
    }
],
"Errors": [],
"Resources": [
    {
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[0]",
```

```
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/sbs_PropertyType.jpg"
    }
  ],
  "Accuracy": 0.69,
  "Version": {
    "VersionNumber": "v16.5",
    "ReleaseDate": "2025-10-23",
    "VersionReleaseNote": ""
  },
  "SpreadsheetFileURL":
  "https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=sbs"
  },
  {
    "Lender": {
      "Id": 9,
      "Key": "tsb",
      "Name": "TSB",
      "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/tsb.png"
    },
    "Result": {
      "AssessedIncome": [
        {
          "Group": "Applicant Income",
          "Label": "Salary and Wage (Gary)",
          "Entered": {
            "Amount": 85000,
            "Frequency": "Annually"
          },
          "Assessed": {
            "Amount": 5471.08,
            "Frequency": "Monthly"
          }
        },
        {
          "Group": "Applicant Income",
          "Label": "Salary and Wage (Lynne)",
```

```
        "Entered": {
            "Amount": 48000,
            "Frequency": "Annually"
        },
        "Assessed": {
            "Amount": 3324.2,
            "Frequency": "Monthly"
        }
    }
],
"AssessedExpense": [
    {
        "Group": "Lending",
        "Label": "Proposed Mortgage",
        "Entered": {
            "Amount": 350000,
            "InterestRate": 0.0649
        },
        "Assessed": {
            "Amount": 2209.94,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Lending",
        "Label": "Credit Cards",
        "Entered": {
            "Amount": 10000,
            "Definition": "Limit"
        },
        "Assessed": {
            "Amount": 380,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Living Expenses",
        "Label": "Insurances (House, Contents, Vehicle,
Life, Health)",
```

```
"Entered": {
  "Amount": 480,
  "Frequency": "Monthly"
},
"Assessed": {
  "Amount": 480,
  "Frequency": "Monthly"
}
},
{
  "Group": "Living Expenses",
  "Label": "Rates & Water Rates",
  "Entered": {
    "Amount": 0,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 230,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Living Expenses",
  "Label": "Childcare & Day-Care",
  "Entered": {
    "Amount": 250,
    "Frequency": "Monthly"
  },
  "Assessed": {
    "Amount": 250,
    "Frequency": "Monthly"
  }
},
{
  "Group": "Living Expenses",
  "Label": "Food - Groceries",
  "Entered": {
    "Amount": 700,
    "Frequency": "Monthly"
```

```

    },
    "Assessed": {
      "Amount": 1236,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Living Expenses",
    "Label": "Utilities (Electricity, Gas, Water)",
    "Entered": {
      "Amount": 400,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 400,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Living Expenses",
    "Label": "Transport (Fuel, WOF, Rego, Public
Transport)",
    "Entered": {
      "Amount": 0,
      "Frequency": "Monthly"
    },
    "Assessed": {
      "Amount": 396,
      "Frequency": "Monthly"
    }
  },
  {
    "Group": "Living Expenses",
    "Label": "Personal Expenses (Clothing, Footwear,
Personal Care, Spend on Dependants)",
    "Entered": {
      "Amount": 0,
      "Frequency": "Monthly"
    },

```

```
        "Assessed": {
            "Amount": 274.5,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Living Expenses",
        "Label": "Telecommunications (Landline, Mobile,
Internet)",
        "Entered": {
            "Amount": 0,
            "Frequency": "Monthly"
        },
        "Assessed": {
            "Amount": 50,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Living Expenses",
        "Label": "Discretionary Living Expenses (Home
Improvements, Entertainment, Flights, Pet Care, Subscription TV)",
        "Entered": {
            "Amount": 100,
            "Frequency": "Monthly"
        },
        "Assessed": {
            "Amount": 100,
            "Frequency": "Monthly"
        }
    }
],
"TotalMonthlyIncome": 8795.28,
"TotalMonthlyExpense": 6006.44,
"UMI": {
    "Value": 2788.84,
    "Required": 0,
    "Status": "Pass"
},
```

```
"Servicing": {
  "Type": "N/A",
  "Value": 0,
  "Required": 0,
  "Status": "Fail"
},
"LVR": [
  {
    "Reference": "Result.LVR.LVRLimit[0]",
    "SecurityId": 1,
    "LVRLimit": [
      {
        "Label": "Property Type",
        "Description": "Unknown ",
        "MaxLVR": 0.95
      }
    ],
    "Value": 0.7,
    "RequiredMaxLVR": 0.95,
    "Status": "Pass"
  }
],
"LEM": [],
"DTI": {
  "TotalIncome": 133000,
  "TotalDebt": 360000,
  "Value": 2.71,
  "RequiredMaxDTI": 6,
  "Status": "Pass"
},
"Deposit": {
  "Amount": 0
},
"MaxLoanAmount": 791600
},
"Warnings": [],
"Errors": [],
"Resources": [
  {
```

```
        "Type": "Image",
        "Reference": "Result.LVR.LVRLimit[0]",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/tsb_PropertyType.jpg"
    },
    {
        "Type": "Image",
        "Reference": "Result.DTI",
        "URL": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-guidelines/tsb_DTI.jpg"
    }
],
"Accuracy": 0.69,
"Version": {
    "VersionNumber": "v.6.8",
    "ReleaseDate": "2025-10-13",
    "VersionReleaseNote": ""
},
"SpreadsheetFileURL":
"https://api.mre.test.blackfin.tools/engine/download-
spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=tsb"
},
{
    "Lender": {
        "Id": 10,
        "Key": "westpac",
        "Name": "Westpac",
        "Logo": "https://storage.googleapis.com/mortgage-rec-
engine-dev.appspot.com/lender-logos/westpac.png"
    },
    "Result": {
        "AssessedIncome": [
            {
                "Group": "Applicant Income",
                "Label": "Applicant Income (Gary)",
                "Entered": {
                    "Amount": 5479.28,
                    "Frequency": "Monthly"
                }
            },

```

```
        "Assessed": {
            "Amount": 5479.28,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Applicant Income",
        "Label": "Applicant Income (Lynne)",
        "Entered": {
            "Amount": 3328,
            "Frequency": "Monthly"
        },
        "Assessed": {
            "Amount": 3328,
            "Frequency": "Monthly"
        }
    }
],
"AssessedExpense": [
    {
        "Group": "Lending",
        "Label": "New Home Loan",
        "Entered": {
            "Amount": 350000,
            "InterestRate": 0
        },
        "Assessed": {
            "Amount": 2223.76,
            "Frequency": "Monthly"
        }
    },
    {
        "Group": "Other Liabilities",
        "Label": "Credit Card(s)",
        "Entered": {
            "Amount": 10000,
            "Definition": "Limit"
        },
        "Assessed": {
```

```
        "Amount": 380,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Fixed Commitments",
    "Label": "Personal Insurances",
    "Entered": {
        "Amount": 480,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 480,
        "Frequency": "Monthly"
    }
},
{
    "Group": "Essential Living Costs",
    "Label": "Essential Living Costs",
    "Entered": {
        "Amount": 1350,
        "Frequency": "Monthly"
    },
    "Assessed": {
        "Amount": 2230,
        "Frequency": "Monthly"
    }
}
],
"TotalMonthlyIncome": 8807.28,
"TotalMonthlyExpense": 5313.76,
"UMI": {
    "Value": 3493.52,
    "Required": 150,
    "Status": "Pass"
},
"Servicing": {
    "Type": "N/A",
    "Value": 0,
```

```
    "Required": 0,
    "Status": "Fail"
  },
  "LVR": [
    {
      "Reference": "Result.LVR.LVRLimit[0]",
      "SecurityId": 1,
      "LVRLimit": [
        {
          "Label": "Property Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        },
        {
          "Label": "Usage Type",
          "Description": "Unknown",
          "MaxLVR": 0.9
        }
      ],
      "Value": 0.7,
      "RequiredMaxLVR": 0.9,
      "Status": "Pass"
    }
  ],
  "LEM": [
    {
      "Label": "Total Lending",
      "LoanId": null,
      "Assessed": 0.7,
      "Margin": 0,
      "Amount": null
    }
  ],
  "DTI": {
    "TotalIncome": 133000,
    "TotalDebt": 360000,
    "Value": 2.71,
    "RequiredMaxDTI": 6,
    "Status": "Pass"
  }
```

```
    },
    "Deposit": {
      "Amount": 0
    },
    "MaxLoanAmount": 876200
  },
  "Warnings": [],
  "Errors": [],
  "Resources": [
    {
      "Type": "Image",
      "Reference": "Result.LVR.LVRLimit[0]",
      "URL": "https://storage.googleapis.com/mortgage-rec-engine-dev.appspot.com/lender-guidelines/westpac_PropertyType.jpg"
    },
    {
      "Type": "Image",
      "Reference": "Result.LVR.LVRLimit[1]",
      "URL": "https://storage.googleapis.com/mortgage-rec-engine-dev.appspot.com/lender-guidelines/westpac_UsageType.jpg"
    },
    {
      "Type": "Image",
      "Reference": "Result.DTI",
      "URL": "https://storage.googleapis.com/mortgage-rec-engine-dev.appspot.com/lender-guidelines/westpac_DTI.jpg"
    }
  ],
  "Accuracy": 0.69,
  "Version": {
    "VersionNumber": "v130ct2025",
    "ReleaseDate": "2025-10-13",
    "VersionReleaseNote": ""
  },
  "SpreadsheetFileURL":
  "https://api.mre.test.blackfin.tools/engine/download-spreadsheet?report_id=7Z0nc3ZJ&case_id=1&lender=westpac"
}
```

```
        }
      ],
      "Accuracy": 0.69
    }
  }
}
```

Error

If errors are encountered during the Generate Report operation:

JSON Body

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "error": {
      "type": "object",
      "description": "Error information",
      "properties": {
        "message": {
          "type": "string",
          "description": "Human readable error message"
        },
        "status": {
          "type": "string",
          "description": "Error code in uppercase letters and _ as space",
          "enum":
            ["INVALID_ARGUMENT", "DEADLINE_EXCEEDED", "NOT_FOUND", "ALREADY_EXISTS", "PERMISSION_DENIED", "RESOURCE_EXHAUSTED", "FAILED_PRECONDITION", "ABORTED", "OUT_OF_RANGE", "UNIMPLEMENTED", "INTERNAL", "UNAVAILABLE", "DATA_LOSS", "UNAUTHENTICATED"]
        }
      },

```

```
"details": {
  "type": "object",
  "description": "Additional error details",
  "properties": {
    "validation_errors": {
      "type": "array",
      "description": "Errors thrown when validating input data",
      "items": {
        "type": "object",
        "properties": {
          "path": {
            "type": "array",
            "description": "An array of property keys or array offsets, indicating
where inside objects or arrays the instance was found.",
            "items": {
              "type": "string"
            }
          },
          "property": {
            "type": "string",
            "description": "Describes the property path. Starts with `instance`, and
is delimited with a dot (.)"
          },
          "message": {
            "type": "string",
            "description": "A human-readable message for debugging use. Provided in
English and subject to change."
          },
          "schema": {
            "type": "object",
            "description": "The schema containing the keyword that failed",
            "properties": {
              "type": {
                "type": "string"
              },
              "description": {
                "type": "string"
              }
            }
          }
        }
      },
      "required": ["type"]
    }
  }
}
```

```

    },
    "instance": {
      "description": "The instance (value) that failed",
      "type": ["null", "object"]
    },
    "name": {
      "type": "string",
      "description": "The keyword within the schema that failed."
    },
    "argument": {
      "type": "array",
      "description": "Provides information about the keyword that failed.",
      "items": {
        "type": "string"
      }
    },
    "stack": {
      "type": "string"
    }
  }
}
}
}
}
}
}
}
}
},
"required": ["path", "property", "message", "schema", "instance", "name", "argument",
"stack"]
}

```

Examples

401: Missing API Key

Missing API Key

```
{
  "error": {
    "message": "Missing API Key",
    "status": "UNAUTHENTICATED"
  }
}
```

401: Invalid API Key

Invalid API Key

```
{
  "error": {
    "message": "Invalid API Key",
    "status": "UNAUTHENTICATED"
  }
}
```

400: Invalid data

Invalid data

```
{
  "error": {
    "message": "Invalid data",
    "status": "INVALID_ARGUMENT",
    "details": {
      "validation_errors": [
        {
          "path": [
            "Details",
            "Loan",

```



```
    "details": {  
      }  
  }  
}
```

Revision #16

Created 2025-05-13 16:10:57 UTC by Janez

Updated 2025-11-27 13:39:12 UTC by Janez